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ABSTRACT

These two booklets, which describe the current status of communications in the Yukon Territory and consider future policy options, focus on the broadcasting industry, including radio and television, and the telecommunications industry, which comprises telephone, telegraph, and cable systems. The first booklet, a background paper, briefly describes the communications systems currently available and provides information on their services, regulations, costs, and facilities. Four tables, five appendixes of statistical information, and a glossary of terms are included. The second booklet is a discussion paper, which addresses eight components of a comprehensive communications policy: (1) broadcasting; (2) telecommunications; (3) VHF (Very High Radio Frequencies) mobile radio system; (4) federal-provincial-territorial consultation; (5) industry and community liaison; (6) distance education; (7) culture; and (8) technological development. Four policy options which incorporate each of these components are then presented. These options range from maintaining the status quo to defining and implementing policies designed to achieve a much higher level of broadcasting and telecommunications service in the territory. The text is supplemented by photographs, a table summarizing the policy options, and a glossary of terms. (EW)

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BROADCASTING AND TELECOMMUNICATIONS

PART I: A BACKGROUND PAPER
FACTS, FIGURES AND DEFINITIONS

YUKON · 2000

Toward a Communications Policy

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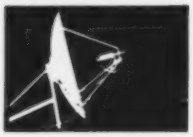

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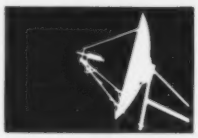

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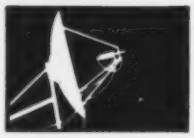
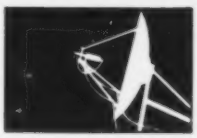


The National Communications Environment



In the past 40 years, communications technology has undergone an evolution which has been staggering in its speed and complexity. The real significance of this evolution is in its impact on our society, on our industries and on our personal lives.

New communications technology can assist in developing new opportunities for all Yukoners; however, new technology, if it is not available here in the north can mean disadvantages, increased isolation and the loss of opportunities for Yukoners.

This Background Paper is designed to provide enough information so that the reader can better understand the issues and options found in the Discussion Paper and thus better contribute to the development of the policy framework.

Some of the information is technical in nature. To assist your understanding of the discussion a Glossary of Terms has been provided at the back of this paper.

Broadcasting in Canada

Introduction

The communications industry is being dealt with in this paper as comprising two major subsections: the broadcasting industry, including radio and television, and the telecommunications industry which takes in telephone, telegraph and cable systems. (See Appendices A and C for a tabular analysis of both sub-sectors.)

The broadcasting industry in Canada is among the most sophisticated and diverse in the world. Over 4000 radio, television and cable systems provide broadcast services to all regions of the country. Appendix B shows the regional distribution of broadcasting systems in Canada in 1985.

Currently radio and television signals are transmitted by conventional means over-the-air and by cable and/or satellite systems.

Broadcasting contributed 13.7 per cent of the $4.7 billion of gross domestic product which the communications industry generated in 1984. The communications industry and the broadcasting subsector are enormous concerns of strategic importance to industry, national defence, culture and education.

Policies and Regulations

Broadcasting services are regulated under both the federal *Radio Act* and the federal *Broadcasting Act*. The federal Department of Communications administers the *Radio Act* which requires that all users of radio frequencies be licensed and conform to technical and operating standards.

The *Broadcasting Act* is administered by the Canadian Radio-television and Telecommunications Commission (CRTC), an independent federal regulatory agency. The CRTC grants users the right to broadcast and regulates the content and the delivery of broadcast services including the licensing and regulation of cable distribution systems and satellite-distributed programming services.

Aside from these responsibilities, the federal government also directly influences the national broadcasting environment through its funding of the CBC and such agencies as the National Film Board, Telefilm Canada and the Northern Native Broadcast Access Program.

Some provincial governments also play a direct role in the broadcasting environment through provincial film development funds and such initiatives as the Knowledge Network, an educational television service, which is funded by the Government of British Columbia.

Over the past few years, the CRTC and the federal Department of Communications have devoted considerable attention to three key policy and regulatory issues:

- simplification of the regulatory process;
- increasing local programming through the introduction of community radio and television services; and
- increasing the availability of television and radio services in underserved communities.

Of particular interest to us in this discussion is the last point and it is the one we shall concentrate on.

Increasing Access to Broadcasting

The issue of extension of service to underserved communities has required that a minimum or basic level of broadcast service be defined. This definition has been a source of some debate but it has come to include two key components.

First, in those communities where the economic means exist, federal broadcasting policy has emphasized the importance of establishing and protecting the financial viability of local radio and television broadcasting services. Secondly, and more recently, federal broadcasting policy has begun to place emphasis on the availability of a choice in broadcasting channels, including both local and distant television services.

Background

In the late 1960's and early 1970's, the CRTC began to focus its attention on those communities without the means to support a local broadcasting service. At that time, basic service was defined in terms of access to CBC radio and television. On this basis, the CBC introduced its Accelerated Coverage Plan whereby it committed itself to providing, free of charge, CBC television and radio services to all communities with a population of 500 people or more.

In the middle and late 1970's, the CRTC began to include access to private television channels in its concept of basic service for communities without the means to support local broadcasting. This broader definition of basic service resulted in considerable activity by private television broadcasters who established microwave-fed repeaters in many remote and underserved areas. However, without the extensive public subsidies that were available to the CBC, private broadcasters could not extend their services as widely as the national public broadcaster.

At the same time, the CRTC began to focus on the issue of choice and, as a result, it licensed additional independent television services in many of the larger cities across Canada. Canadians in larger centres began to accept the availability of three or more separate Canadian television channels as a basic level of service.

Broadcasting by Satellite

After extensive public hearings in the early 1980's, the expanded concept of basic service and the emphasis on choice was extended to the country as a whole. The CANCOM Service (Canadian Satellite Communications Inc.) was licensed to deliver four Canadian television services (two independent television stations, a CTV affiliate and a French language television package) to remote and underserved communities. As a result, a large number of small cable and rebroadcast systems were licensed in remote and underserved areas of the country. An underserved community was defined as any community which received two or less television services over-the-air.

In later licensing decisions, the CRTC authorized CANCOM to distribute four U.S. television services (CBS, NBC, ABC and PBS) as well. These have now become part of the commonly accepted definition of a basic service. However, it should be noted that CBC radio and television continue to be the only services that are mandated to be available free of charge. All other services in communities where the economic base is not large enough to support local private sector television must be paid for by local residents through an additional payment to CANCOM over and above the rate charged for access to cable. As a result, rates for cable service in CANCOM-served communities are at least two to three times higher than rates for cable in communities where broadcast services are available over-the-air.

Native Broadcasting

The licensing of CANCOM also provided a vehicle for the federal government to pursue other objectives through further extensions of service. Native communities throughout the country had long been active in forming communication societies and in trying to produce and distribute native language programming.

These activities were assisted by the federal Northern Native Broadcast Access Program which was established in 1983. This program received $40 million over 4 years to assist native communications

societies to produce up to five hours of television programming and 20 hours of radio programming a week.

Conditions were attached to the CANCOM license which required the company to make satellite distribution space available to native communications societies.

Provincial Government Involvement

Other jurisdictions also have developed definitions of basic service. For example, in the early 1980's, Ontario developed a definition of a basic television service which included CBC English and French, one private television service and the TV Ontario service. Since then, the Government of Ontario has worked extensively with the CRTC, the CBC and private broadcasters to ensure that the availability of broadcast services in Ontario is extended as far as possible. As well, Ontario played an active role in the CRTC hearings which led to the licensing of CANCOM.

TV Ontario is not part of the CANCOM package. Extension of the TV Ontario service, then, has involved a substantial commitment on the part of the Ontario government to acquire and install satellite receiving and rebroadcasting equipment in many small and remote Ontario communities.

Other provincial governments also have been active in extending service by introducing their own programs to supplement federal activities (eg. B.C. government has established the Knowledge Network which provides educational television programming for B.C.).

Recommendations by Recent Task Forces

Recently, two major reviews have focused on the federal policy and regulatory approach to broadcasting. The federal *Nielsen Task Force on Program Review (1986)* looked at many aspects of communications policy-making and regulation in its comprehensive review of all federal programs. In particular, the Task Force noted the importance of the regional programming function performed by the CBC and praised the Northern Native Broadcast Access Program for the way in which it directly achieved its policy objectives.

The October 1986 federal *Caplan/Sauvageau Report (The Report of the Task Force on Broadcasting Policy)* took a much more comprehensive approach to broadcasting policy and regulatory issues. The principal recommendations of the report which are directly relevant to Yukon communications policy may be divided into three categories.

First, the report addressed the policy and regulatory framework. It concluded that a new broadcasting act should be introduced which would retain many of the policy principles currently found in the 1968 federal *Broadcasting Act*, but would also include principles relating to native language programming and the constitutional right to equality. Further, the Task Force recommended that this new act contain a provision which would allow the federal government a stronger voice in the CRTC's regulatory decisions.

Secondly, the report reaffirmed the CBC as the principal national broadcaster. The report recommended that the CBC focus its attention on extending its television and radio services and on increasing the Canadian and non-U.S. content of its programming. In so doing, the Task Force on Broadcasting Policy recommended that such services as the Parliamentary Network and the Northern Television Service become part of the Corporation's statutory mandate and that the provision of native language programming be included in this revised mandate.

Thirdly, the report recommended that special efforts be made to reduce the cost of providing service in underserved areas of the country. Measures to achieve this could include: special tariffs for satellite carriage of services to remote areas; direct government funding to lower the cost of receiving CANCOM services in smaller communities; and a re-orientation of the CANCOM service by encouraging it to focus exclusively on serving rural and remote communities.

Telecommunications in Canada

Introduction

Broadly defined, the telecommunications industry comprises telephone, telegraph and radio common carrier systems. Of these, telephone systems contribute $3.8 billion or 80 per cent of the gross domestic product of the entire communications industry.

Appendix C lists the 1984 operating budget of telecommunications companies in Canada. Total revenue for the industry in 1984 was in excess of $10 billion.

On a national basis, 98.6% of all households in Canada have access to telephone service. As is set out in Table I, total telephones and telephones per 100 people vary significantly across the country.

Table I:
Selected Telephone Penetration Statistics, 1984.

Location	Total Telephones	Telephones per 100 People
Yukon	**14,077**	**61.7**
N.W.T.	26,000	50.6
Ontario	6,030,623	66.8
Canada	16,480,000	65.2

Source: Statistics Canada

Policies and Regulations

Telecommunications carriers currently are subject to federal jurisdiction if their operating territory crosses provincial or territorial boundaries (e.g. Bell Canada and NorthwesTel) or if they have been deemed by Parliament to be an undertaking of national importance (e.g. BC Tel). Carriers who operate only within one province or city are subject to provincial or municipal regulation. Federally regulated telecommunications carriers are subject to the relevant provisions of the federal *Railway Act* and are regulated by the CRTC.

However, the responsibility for regulating telecommunications companies has recently come under question. Under CRTC policies, federally regulated telephone companies are required to allow system interconnection by competing carriers such as CNCP Telecommunications and Cantel. Provincially regulated carriers on the other hand are not subject to federal interconnection policies. This has the effect of limiting the areas of the country in which competing carriers such as CNCP and Cantel may offer certain of their services which require interconnection to the local telephone system.

This has culminated in the Alberta Government Telephones (AGT) case. Alberta Government Telephones is a provincially owned and regulated crown corporation providing telecommunications services in the province of Alberta. After encountering major difficulties in reaching an interconnection agreement with AGT, CNCP applied to the courts asking them to find that Alberta Government Telephones is an interprovincial undertaking and therefore, should be subject to federal jurisdiction, and thus, the telecommunications policies established by the federal government and the CRTC. This case is now before the Supreme Court of Canada and many observers predict that the court will find in favour of federal jurisdiction.

In response, federal, provincial and territorial ministers responsible for communications have begun a consultative process designed to examine the current policy and regulatory framework. It is envisioned by some that the new framework would be characterized by a sharing of responsibilities between the various governments. But there are three interrelated issues to be resolved.

First, governments must agree on the roles and responsibilities that each will assume. Also, should the upcoming Supreme Court decision modify the existing framework, the governments must reach agreement on how to implement the new framework.

Secondly, governments must agree on the extent to which uniform national policies will be established with respect to such issues as terminal attachment and system interconnection.

Thirdly, governments must reach an agreement on a longer term strategy to deal with the issue of the rebalancing of long distance telephone rates and loc-

al telephone rates.

Based on its findings that lower long distance telephone rates could result in significant economic benefits, the CRTC has begun a gradual rate rebalancing process by freezing at their current levels the contribution of long distance telephone services to the total revenues of the federally regulated carriers. This freeze will place significant upward pressures on rates for local telephone service. Faced with this, governments must determine the extent to which they are in agreement with a policy of rate rebalancing and must establish measures to ensure that a uniform national policy towards rate rebalancing is implemented.

Basic Telecommunications Service

As in the area of broadcasting, the CRTC has addressed the issue of a definition of basic telecommunications service.

The current federal definition of basic telecommunications service is drawn from the federal *Railway Act*. This act specifies that telecommunications services are to be provided at a fair and reasonable rate and on a non-discriminatory basis.

The concept of "fair and reasonable" is applied by the CRTC according to a formula based on the company's rate of return.

Application of the non-discrimination requirement has been interpreted to mean that customers within each class of service should be charged the same rate. Class of service is defined using a number of factors, including the total number of telephones within the local calling district and the type of service provided, for example, single or party line service.

In this context, the CRTC also requires all regulated carriers to define, and to comply with certain quality of service indicators. These service indicators relate to such factors as the time it takes to receive a dial tone, the number of times customers are unable to make their connection due to system overload and the time it takes for repair calls to be answered.

In the late 1970's, the CRTC entered into a major program with both Bell and B.C. Tel designed to upgrade the quality of service available to subscribers in remote and rural areas. In most instances, this involved access to private line rather than party line service. However, in cooperation with the Ontario Government and the CRTC, Bell also participated in the North of 50^{0} program, designed to bring basic telephone service into many remote native and non-native communities.

Allowing for Increased Competition

Recently, in most areas of the country where the telecommunications carrier is federally regulated, the CRTC has created regulations which allow entry by competitors. As a result, some level of competition and consumer choice is now a part of the federal definition of a basic telecommunications service. Competition policy issues include access to satellite facilities, the provision of cellular mobile telephone services, system interconnection, terminal attachment and the sharing and resale of basic and enhanced telecommunications services.

However, the CRTC has expressly prohibited competition in the provision of public long distance telephone services. This prohibition has been based on the premise that the rates charged for public long distance services are used in part to subsidize local telephone services and that competition in the provision of long distance services could, therefore, result in substantial increases in local rates. This issue is unlikely to be resolved until the social and economic consequences of such a change in telephone rates are fully addressed.

Broadcasting in the Yukon

Introduction

The first broadcasting service available in the Yukon was a radio service (CFWH) provided by the American Armed Forces based in Whitehorse during the early 1940's. This service was taken over by the Canadian Army in 1945 using army and civilian volunteers. A second radio service (CFYT) was provided by the Canadian Army Signal Corps in Dawson City during the 1940's.

In November 1958, the CBC took over the radio facilities in Whitehorse and Dawson and began to extend radio services throughout the territory. Today, there are three radio services originating in the Yukon: CBC radio, CKRW; and CHON-FM.

In addition, the CBC Northern Television Service is available throughout the territory. This television service, like other CBC regional television services, has a mandate:

i) to provide information and entertainment from within the region, for the region;
ii) to look at national issues from a regional point of view; and
iii) to provide a reflection of the region for a national audience.

In communities served by cable, a wide variety of both Canadian and U.S. television services are available.

Taken together, these broadcast services generate approximately $3 million in revenues and employ approximately seventy people.

Appendix D provides a detailed overview of the availability of broadcast services in the Yukon.

Broadcast Services

While broadcast services are available in all areas of the Yukon, it is clear that there are significant disparities in the level of service.

CBC radio and television are available in all recognized Yukon communities as well as the rural areas of Tagish, Marsh Lake and White River, for a total of 22 locations. CBC radio is provided in three locations and CBC television in thirteen locations by facilities operated by the Department of Community and Transportation Services. These facilities are referred to as the Community Radio and Television System.

In a number of the locations served by mountaintop repeaters, the technical quality of the television signal provided by the Community Radio and Television System is poor. These locations include Carcross, Ross River, Destruction Bay and Burwash Landing.

CHON-FM broadcasts in Whitehorse on an FM frequency and is available in thirteen additional communities, with plans to extend the service to Dawson City early in 1987. The CHON-FM service is delivered to communities outside Whitehorse via satellite. Satellite carriage is provided by CANCOM under the condition attached to its license requiring it to assist native language broadcasters. CHON-FM is responsible for installing earth stations and local transmitters to receive the satellite signal and to make the service available in the community. In some cases, CHON-FM shares earth stations which have been installed by the Department of Community and Transportation Services as part of the Community Radio and Television System.

CKRW broadcasts in Whitehorse using an AM frequency. As well, when CHON-FM is not on the air, the CKRW signal is carried by CANCOM and is made available in the thirteen communities where CHON-FM has installed local rebroadcast facilities.

Community radio services are available in two communities. These services are operated by the community on a non-profit basis to provide local news, information and entertainment programming.

CHLA (Yukon Parliamentary Broadcasting Society) currently broadcasts the proceedings of the Yukon Legislative Assembly on a one watt transmitter. The signal is received in Whitehorse within a one mile radius of the Main Administration Building of the Government of the Yukon.

There are at least twenty-three satellite dishes

located in Yukon communities receiving signals from the Anik DI satellite. The majority of these dishes are either part of the Community Radio and Television System or receive only the CHON-FM/CKRW signal. However, in eight communities, separate dishes serve cable or rebroadcast systems providing a variety of Canadian and U.S. television services.

A dish to receive signals from the Anik C satellite also has been installed in Whitehorse by WHTV. The Anik C satellite carries such services as the Knowledge Network (an educational television service funded by the Government of British Columbia) and such discretionary Canadian services as pay television, a music video service (Muchmusic) and a sports service (TSN). However, because of the way the Anik C satellite has been positioned in its orbit around the earth, it is very difficult to receive a good quality signal from it in Whitehorse. In communities north of Whitehorse, signals from Anik C are virtually unavailable.

In Whitehorse, conventional television services available on the WHTV cable system are augmented by the community channel. This channel is programmed by WHTV and carries local television programming originating in the WHTV studio and programming which is made available from other sources such as the Government of the Yukon.

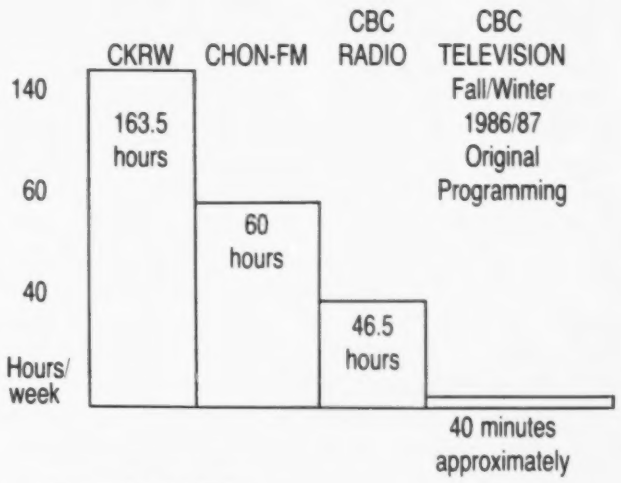
In total, seven recognized Yukon communities have access only to the CBC television and radio services. Other communities with cable or multichannel rebroadcast systems have access in varying degrees to all local services plus the CANCOM package which includes four Canadian and four U.S. television services as well as a number of Canadian radio services. In Whitehorse, cable subscribers also may have access to such discretionary services as pay television depending on the uncertain quality of the signal received from the Anik C satellite.

In addition to this, the Yukon has one of the highest per capita ownership rates of videocassette recorders in the country. Privately owned satellite dishes are widespread as they are capable of providing high quality TV signals regardless of the remoteness of the residence from a community. A descrambler can be purchased for the CANCOM signal that comes from the Anik D Satellite. This descrambler is attached to the electronics package that comes with a private satellite dish system. For an initial purchase price of $1,700, or less, plus a monthly charge for the CANCOM service a very high level of TV service is available virtually anywhere in the Yukon.

Programming

Table II illustrates the average amount of local Yukon radio and television programming available from broadcast services in the territory.

Table II: Local Yukon Programming, Hours/Week, 1986.



Source: Originating Stations

CKRW provides the largest amount of local radio programming on a weekly basis. The station airs approximately 23.5 hours of local programming each day, Monday to Friday, providing another 46 hours on the weekend.

CHON-FM is a non-commercial radio station with an aboriginal and cultural mandate. It broadcasts 12 hours each day, Monday to Friday. The station provides programming in English and the seven aboriginal languages of the territory.

CBC radio provides 46.5 hours of local programming per week in addition to the CBC national radio programming it carries.

The CBC Northern Television Service provides 21.5 hours of programming per week on top of the CBC national network television programming. These 21.5 hours consist of 7.5 hours of news originating from Vancouver plus 11 hours of programming acquired from sources outside the north and often, from outside the country. The remaining three hours per week are used to deliver programming originating in the north.

Each year, from its production centre in Yellowknife, the CBC Northern Television Service produces 34 original half hour current affairs programs entitled *Focus North*. In addition, 13 *Northland* programs are aired each year. Each *Northland* is 30 minutes in length. Other programs produced by the Northern Service include the *Dene Series* and *Tarqravut*: however, these programs do not normally include information about the Yukon.

These programs are repeated a number of times to fill the three hour weekly time slot. The CBC Northern Television Service does not produce a local news service.

Since October, CBC programming originating from the Yukon occurs weekly. This has resulted in an average of approximately 10 minutes per week of Yukon related local television programming on *Focus North*. In the previous program year Yukon content on *Focus North* was only about 4 minuted per week. In addition to the 10 minutes per week on *Focus North*, Yukon content on the CBC Northern Television Service will increase by thirty minutes per week as the CBC Northern Television Service airs 24 television programs produced by Northern Native Broadcasting Yukon.

As well, varying amounts of local radio and television programming are provided by community radio stations and the community television channel operated by WHTV.

As illustrated, Yukoners are relatively well served by local radio programming, but they are poorly serviced by local television programming.

Production Facilities

CBC Yukon has studio and remote audio production capability. As well, a CBC television production crew with editing facilities has now been established in the Yukon. This crew will produce material for *Focus North*.

Northern Native Broadcasting Yukon (NNBY) has eight track audio production facilities and remote production capability. As well, NNBY has developed a television production facility with initial plans to produce 24 half hour programs on the Yukon.

CKRW has both studio and remote audio production facilities. WHTV and the Ross River Broadcasting Society have studio television production facilities.

In addition, there are two independent production houses in the Yukon (AV Action, Logan Video) capable of producing broadcast quality audio and visual productions. As well, the Libraries and Archives Branch of the Government of the Yukon has acquired VHS consumer quality video equipment which will be made available on a loan basis to community groups and individuals interested in producing programming.

In spite of significant disparities in the availability of broadcast services and local programming, a local production industry in the Yukon has begun to take shape.

Telecommunications in The Yukon

Services

Telephone and related telecommunications services are provided in the Yukon by NorthwesTel. The area served by the company includes all of the Yukon, the western portion of the Northwest Territories and northern British Columbia.

NorthwesTel is subject to federal jurisdiction and therefore, is regulated by the CRTC. The services provided by the company include local, private line and public long distance telephone services, and telegraph/telex services. Remote areas are served by radiotelephone.

The specialized voice and data telecommunications services offered by Telecom Canada and by CNCP currently are not available as part of the standard service package offered by NorthwesTel. However, the company has plans to provide the Telecom Canada services in the ring of 1987 and currently offers the CNCP services on a special request basis. These specialized services include a wide variety of voice and data transmission services designed to meet clients' needs for high volume transmission or special data applications.

Telephone

Rates for local residential services currently range from $4.60 per month to $7.20 per month. Rates for business services vary from $8.90 per month to $14.45 per month. In more remote locations, rates for the RuralTel II radiotelephone service involve charges for network access ($6.00 per month, residential; $12.00 per month, business), use (6 cents per minute for originating local calls), rental of the radio telephone set ($40.00 per month) and a one-time installation charge ($200.00). NorthwesTel currently has an application before the CRTC to increase its rates for basic residential service by 9% and to increase rates for some specialized services. No increases are proposed for long distance services.

Residential telephones made use of 6,052 telephone lines, while business telephones and pay telephones made use of 4,789 serving a total of 14,077 telephone sets in the Yukon in 1984. The types of line utilized by residential and business subscribers are set out in Table III. All of these business and residential lines have access to direct long distance dialing. Of the 10,841 telephone lines in the territory, only 4.28% are multi-party lines. This compares favourably to such well served areas as Ontario where 7% of the total telephone lines are multi-party.

Table III: Residential and Business Telephone Lines, 1984

	Residential	Business
Private	5,677	3,155
Two-Party	204	31
Multi-Party	171	59
PABX	—	341
Centrex	—	860
Coin	—	185
Mobile	—	158
Total	6,052	4,789

Source: Statistics Canada.

While there are no accurate statistics, actual penetration of telephone service in the Yukon is estimated to equal only 85% of all households which is approximately 14% lower than the national average of 98.6% in 1984. However, given that some residents of the territory may choose not to have a telephone, penetration of telephones among households who wish to have access to the service may be somewhat closer to the national average.

Future Services

The carriage of telephone traffic between communities in the Yukon currently is undertaken for the most part via long haul analog microwave systems. Analog transmission technology is an older technology which does not allow for high speed data or video applications. NorthwesTel plans to convert these analog transmission systems to the more versatile computerized digital technology over the next few years. As well, the company has begun to carry traffic via

satellite from many small and remote communities throughout its service territory and anticipates the establishment of a satellite transmission grid which covers all major transmission paths.

In addition, the company intends to introduce a new radiotelephone system, the Aurora 400 Ultra High Frequency (UHF) radiotelephone system. This system will provide mobile and fixed base (that is, residential) telephone service along the major highways in the territory. Extension of coverage will depend on demand for the service.

Regulation of NorthwesTel by the CRTC has tended not to focus on extension of telephone service but rather, on quality of service issues relating to existing telephone service, particularly the service provided by radiotelephones.

NorthwesTel

NorthwesTel is a wholly-owned subsidiary of Canadian National Railway (CNR) and is part of this company's communications division. As such, NorthwesTel pays 100% of its dividends to CNR. Revenue in 1985 was $60.4 million ($13 million from the Yukon) and dividends that year amounted to $3.5 million. Appendix E illustrates NorthwesTel's position within CNR and outlines its financial indicators for 1984 and 1985.

Table IV illustrates total operating revenues to NorthwesTel in 1984 and 1985, divided by category of service. This table clearly demonstrates the high reliance of the company on long distance revenues. In 1985, local revenues accounted for only 11% of total revenues, while long distance accounted for 58%. In addition, some portion of both the private line and the other category is for long distance service. Given this, company officials estimate that the ratio of long distance to local revenues is approximately 80/20. Other telephone companies in Canada have a ratio which is closer to 50/50. The average monthly long distance telephone bill in the Yukon ranges from $60.00 to $70.00 for residential subscribers.

Table IV: Operating Revenues for NorthwesTel for 1984 and 1985 ($ million)

	1984	1985	Change
Local	6.772	6.957	+ 3%
Long Distance (includes telegraph)	32.373	35.336	+ 9%
Private Line	12.939	13.027	+ 0.6%
Other (includes broadband and telex)	3.541	5.088	+44%
Total	55.625	60.408	+ 9%

Source: NorthwesTel Annual Reports, 1984/1985.

In 1985, NorthwesTel employed 492 people at a salary cost of approximately $15 million. Of these employees, 300 were located in the Yukon. That same year, NorthwesTel employed 64% of all Yukon personnel involved in the communications/utility sector and 3.1% of the total Yukon workforce. It injected approximately $9.6 million in salaries into the local economy. Based on current trends, it is expected that NorthwesTel will continue to be a major source of employment in the Yukon economy, employing approximately 2.6% of the predicted Yukon workforce of 11,206 in 1987.

As this description of the Yukon telecommunications environment has demonstrated, the current structure and performance of NorthwesTel is significant. This environment is characterized by a relatively high level of access to basic service in the large communities with some evidence to suggest that inequities may exist in the availability of telephone service in other areas of the territory. As well, the current absence of specialized voice and data services constitutes a significant gap in the services available to business and larger volume users.

Beyond this, it should be noted that the status of NorthwesTel as a monopoly provider of telephone services has begun to be challenged by the establishment of competitive private long distance telephone systems. The emergence of these systems could be-

gin to erode the revenue base of NorthwesTel and, without compensating regulatory adjustments, could impact on the rates and quality of service provided by the company.

In addition to this, it is important to note that while NorthwesTel will continue to make extensive use of land-based transmission facilities, the company also will continue to expand its use of satellite as a transmission technology. This approach is supported by the combination of long distances and low traffic levels with which the company must deal.

This interest in satellite parallels that of broadcasters in the Yukon who also will continue to see satellite as a critical component of their distribution infrastructure.

VHF Mobile Radio System

Role of the System

In 1974, representatives of the federal and territorial governments agreed that, in the absence of appropriate common carrier facilities, a private VHF radio communications system should be established to meet the remote and mobile needs of a number of government departments and public agencies operating in the Yukon. Further, it was agreed that the responsibility for managing and operating the system should be assigned to the Highways Branch of the current Department of Community and Transportation Services. (Appendix F provides a list of current users of the VHF Mobile Radio System.)

While originally intended as a means of increasing safety for remote work crews, the VHF Mobile Radio System has now evolved into an important communications network used for relaying weather reports, work assignments and other related information between highway maintenance camps, remote units and head office. At the same time, the number of users has grown substantially, allowing the Department of Community and Transportation Services to keep rates low, thereby minimizing the economic incentives for users to switch to common carrier facilities.

The Future of the System

The VHF Mobile Radio System currently faces a number of major problems. First, the technology on which it is based is becoming obsolete. Replacement parts are both expensive and difficult to acquire. Secondly, the system is becoming increasingly unreliable due to the aging of equipment. Thirdly, users are becoming more sophisticated in their approach to telecommunications services and the current system is unable to respond to these new needs.

A recent report which examined the needs of current users arrived at the following conclusions:

a) The system currently carries only voice messages. There is an existing need for data capability which can be expected to increase.

b) User radios and PABX interfaces currently exceed 600 units. This can be expected to increase to about 800 in five years and approach 1,000 after ten years.

c) Good coverage is required on all highways and in all communities. Future extensions to include busy waterways and heavily used off-road areas is desirable.

d) Privacy of transmissions is desirable, although access to all users also has operational advantages to some users.

Five approaches have been identified to deal with the problems presented by the current VHF Mobile Radio System.

The first is commonly referred to as the mobile satellite (MSAT) project. This project will be funded by the federal government and involves the launch of a high powered satellite to receive and transmit voice and data services between mobiles in remote locations and a central base station or between two mobiles. The MSAT system is intended to provide a high quality, reliable commercial mobile service in remote areas comparable to that provided by land-based services in larger urban areas.

However, difficulties in receiving international frequency assignments in co-operation with the U.S. communications regulator, the Federal Communications Commission, already have been encountered.

Beyond this, the viability of MSAT as a service in the north is open to question. With projected rates of $2,500 - $3,000 for mobile terminals, $50 for monthly access charges, and usage charges from $l - $l.50 per minute, MSAT will be more expensive than other mobile systems. In addition, the line-of-sight requirements of the satellite-based MSAT system could significantly impair its service quality in mountainous terrain such as that of the Yukon.

Given these uncertainties, it is possible that the implementation of the full MSAT service may be delayed beyond l990 or, that the service may not proceed at all. As well, it is not clear that once the system is introduced it will provide a higher quality of service than that available from more conventional and less expensive systems.

Therefore, it may not be appropriate for remote users to base policy or investment decisions on the expectation that the MSAT service will be available by l990 or that this service will be appropriate for all applications.

In light of this, the remaining four approaches are being given serious consideration:

i) Maintain Existing System
Under this approach, existing electronics in mountain-top repeaters would be replaced as required and power supplies would be upgraded. No new service features would be added.

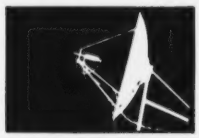
ii) Improve Existing System
This would entail upgrading the existing system to provide more service features and to improve reliability and access to replacement parts.

iii) NorthwesTel Proposal
NorthwesTel has proposed the installation of a new system using the Aurora 400 UHF band radiotelephone system.
Basic Aurora 400 service already is planned for use by the general public in the Whitehorse area. This proposal would extend the availability of this system to meet the territory wide highway coverage requirements of current users of the VHF System. New service features would be available and the system would be maintained and managed by NorthwesTel. Under certain conditions, this new service could provide an infrastructure for increasing the availability of basic telephone service in underserved areas of the territory. However, this service would only be available at rates significantly higher than those currently charged for basic residential telephone service.

iv) Proposal by Total North Communications
Total North has proposed the introduction of a new system using the existing VHF-based mobile system in combination with satellite trunking. This system would provide new features for users and has the additional advantage of creating an infrastructure which could complement the delivery of other services such as distance education if a satellite-based distribution system were to be established. However, the capability to provide these other services is not included in the cost estimate associated with this proposal. Like the current VHF System, the Total North system would be owned and operated by the Government of the Yukon.

While these proposals will need to be assessed based on cost and service factors, a final decision also should include an assessment of the relationship between the additional services these four approaches could provide and the overall priorities and directions established by a Yukon communications policy framework. In the absence of such a policy framework, it will be difficult to make a final decision between these four competing approaches.

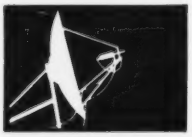
Appendix A



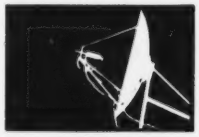
Gross Domestic Product by Sub-Sector of the Communications Industry, 1984

Sub-Sector	$ (million)	% of Total
Radio and Television	651.1	13.7%
Telephone Systems	3,826.1	80.3%
Telegraph and Cable Systems	286.6	6.0%
Total	4,763.8	100.0%

Source: Statistics Canada



Appendix B



Regional Distribution of Broadcasting Systems, 1985

Province/Territory	Radio	Television	Cable	Total
Newfoundland	90	151	49	290
Prince Edward Island	7	7	5	19
Nova Scotia	74	64	47	185
New Brunswick	53	41	37	131
Quebec	306	266	200	772
Ontario	316	274	210	800
Manitoba	157	263	62	482
Saskatchewan	56	104	106	266
Alberta	144	144	96	384
British Columbia	290	338	121	749
Yukon	**23**	**20**	**3**	**46**
Northwest Territories	46	73	5	124
Total	1,562	1,745	941	4,248

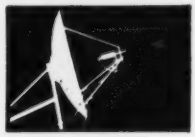
Source: CRTC

Appendix C

Operating Revenues of Telecommunications Companies, 1984

Company	($ Million)	% OF TOTAL
Federal regulation:		
Bell Canada	5,290.6	52.0
British Columbia Telephone	1,147.8	11.3
CNCP Telecommunications	338.1	3.3
Teleglobe Canada	201.6	1.9
Telesat Canada	128.0	1.3
NorthwesTel	55.6	0.5
Terra Nova Telecommunications	38.2	0.3
Sub Total (1)	7,199.9	70.6
Provincial regulation:		
Alberta Government Telephone	978.8	9.6
Saskatchewan Telecommunications	382.7	3.8
Manitoba Telephone System	294.3	2.9
Maritime Telegraph and Telephone	282.1	2.7
New Brunswick Telephone	229.6	2.2
Quebec-Telephone	164.1	1.6
Newfoundland Telephone	127.0	1.2
Telebec	100.0	1.0
Island Telephone	30.5	0.3
Northern Telephone	25.9	0.2
Sub Total (2)	2,615.0	25.5
Other regulation (including Radio Common Carrier Systems):		
Sub Total (3)	359.1	3.9
Grand Total (1 + 2 + 3) Telecommunications Carriers Sector	10,174.0	100.0

Source: Statistics Canada



Appendix D

Availability of Broadcast Services in the Yukon, 1986

Location	Classification*	CBC Radio	CBC TV	Private Radio	Non-Commercial Radio (NNBY)	Community Radio	Cable or Rebroadcast Systems	TVRO Dishes Using Anik DI Satellite
				(CKRW)	(CHON-FM)			
Beaver Creek	UI	X	X (YTG)					YTG-TVRO
Burwash Landing	UI	X	X (YTG)	X**	X			NNBY-TVRO
Carcross	UI	X	X (YTG)	X**	X		X	NNBY-TVRO
Carmacks	V	X	X (YTG)	X**	X		X	YTG-TVRO
Dawson	T	X	X	X		X	X	CBC-Dawson City TVRO
Destruction Bay	UI	X	X (YTG)	X**	X (via Burwash)			NNBY-TVRO (Via Burwash)
Elsa	H	X	X					CBC
Faro	T	X	X	X	X (via WHTV)		X	CBC-CSSL***-TVRO
Haines Junction	V	X	X (YTG)	X**	X			YTG-TVRO
Keno	UI	X	X					CBC
Marsh Lake	RA	X	X					No TVRO
Mayo	V	X	X	X**	X		X	CBC-NNBY-TVRO
Old Crow	UI	X (YTG)	X (YTG)	X**	X			YTG-TVRO
Pelly Crossing	UI	X (YTG)	X (YTG)	X**	X			YTG-TVRO
Ross River	UI	X	X (YTG)	X**	X	X		NNBY-TVRO
Stewart Crossing	UI	X (YTG)	X (YTG)					YTG-TVRO
Tagish	RA	X	X (YTG)				X	TVRO
Teslin	V	X	X (YTG)	X**	X			YTG-TVRO
Upper Liard	UI	X	X	X**	X			NNBY-TVRO
Watson Lake	T	X	X	X**	X		X	CBC-NNBY-Private-TVRO
Whitehorse	C	X	X	X	X		X	CBC-WHTV-TVRO
White River	RA	X	X (YTG)					No TVRO
Total		22	22	15	14	2	8	
Total (YTG)		3	13					

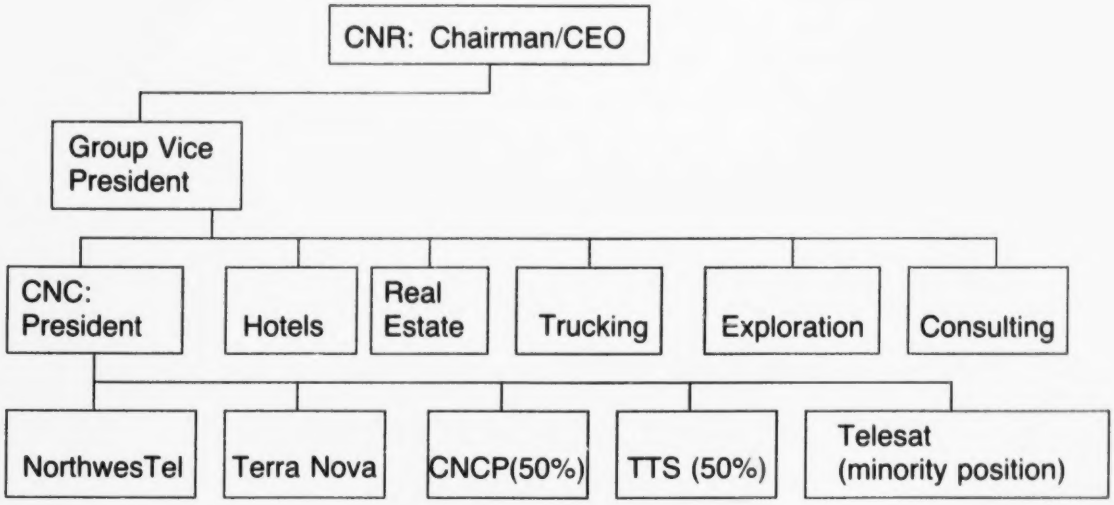
* UI - unincorporated community; T - town; V - village; RA - rural area; C - city; H - hamlet

** Available in communities via satellite; the CKRW service is substituted for the CHON-FM service whenever CHON-FM is not broadcasting - i.e., 7 p.m. - 7 a.m. Monday to Friday and from 7 p.m. Friday to 7 a.m. Monday. CKRW service will be in Faro on a full-time basis as of January 1, 1987 and in Watson Lake as of spring, 1987.

*** Canadian Satellite Systems Ltd.

Appendix E

Canadian National Railway Corporate Structure (Communications Division)



Key Financial Indicators for NorthwesTel, 1984 and 1985 ($000)

	1985	1984
Gross Revenues	$ 60,408	$ 55,697
Income Before Income Taxes	12,522	12,049
Total Financing Cost	7,436	6,247
Income Taxes	6,537	6,075
Net Income	5,985	5,974
Dividends	3,591	3,830
Earnings per Share	8.09	8.07
Dividends per Share	4.85	5.18
Equity	54,134	51,740
Return on Equity	11.3%	11.8%
Long-Term Debt	58,433	56,187
Debt/Equity Ratio	51.9%	52.1%
Return on Investment	12.2%	11.7%
Gross Plant Additions	16,230	14,301
Total Plant, at Cost	178,351	168,686

Source: NorthwesTel Annual Report, 1985, p. 3.

Appendix F

Summary of VHF Mobile Radio System Users in the Yukon

Agency Designation	Quantities		
	Mobiles	Base Stations	PABX Telephone
Transportation & Community Svc.	309	22	22
Renewable Resources	64	1	2
Government Services	0	0	2
Protective Services	15	1	3
Health & Human Resources	0	0	1
Justice	0	0	1
RCMP Whitehorse	89	12	1
RCMP Yellowknife	5	2	0
RCMP Atlin	2	1	0
Northern Canada Power Commission	16	0	4
Public Works Canada	10	0	1
BC Ministry of Universities	2	0	0
Government of NWT (Highways)	10	0	0
DIAND	29	8	3
Health & Welfare Canada	8	0	0
City of Dawson	1	0	0
Totals:	560	47	40

Source: YTG 1986 Billing Records

Glossary of Terms

analog: a transmission technology capable of carrying voice and low-speed data applications; the standard technology used for telephone systems

Anik B/Anik C/Anik D: Canadian satellites are called Anik; the letter following indicates the generation of the satellite and the frequencies employed; a satellite's coverage area, or footprint, can be one third of the earth's surface, or a smaller area by means of spot beams

Aurora 400 UHF: is a radio-telephone communications system connecting radio-telephone subscribers to land based telecommunications systems and to each other. NorthwesTel's Aurora system will be operating in the 400 MHz frequency band and will accommodate both fixed station and mobile customers

CNCP (Canadian National-Canadian Pacific): a national telecommunications carrier offering data and private voice services

cable distribution system: a system which uses co-axial cable to distribute television and radio services in the local community; only those homes which are connected may receive the programming

Canadian Radio-Television and Telecommunications Commission (CRTC): an independent federal regulatory agency that licences broadcasting and federally regulated telecommunications companies

CANCOM (Canadian Satellite Communications Inc.): a company licensed by the CRTC to deliver television and radio channels via satellite to remote and underserved communities throughout Canada; CANCOM is licensed to distribute four Canadian television services (two independent television stations, a CTV affiliate and a French language television package), four U.S. television services (CBS, NBC, ABC & PBS) as well as eight Canadian radio signals

Cantel: a major cellular mobile telephone company operating in many large cities in Canada

Caplan/Sauvageau Report: the Report of the Task Force on Broadcasting Policy, 1986; a Task Force appointed by the federal Minister of Communications in May 1985 to examine and make recommendations to the Minister on an industrial and cultural strategy to govern the future evolution of the Canadian broadcasting system through the remainder of the century

cellular mobile telephone: a specialized form of mobile telephone service which uses modern computer controlled radio technology which was developed to reduce problems associated with the congestion of radio frequencies in urban areas; use of this technology has permitted many of the features available with normal telephone service to be available with cellular mobile telephone service as well

common carrier: a company such as NorthwesTel which is responsible for the provision of telephone and data telecommunication services to all users without discrimination

Community Radio and Television System: a series of mountaintop repeaters operated by the Department of Community and Transportation Services providing CBC radio in three locations and CBC television in thirteen locations

digital: an advanced computerized transmission technology which allows for high speed data, video and voice applications

discretionary service: a specialized broadcasting service which is available only with the payment of a fee, in addition to regular cable fees — e.g. pay television

distance education: the use of television, radio, telephone and satellite-linked computers to teach and train students who live in remote communities

earth station: the receiving equipment located on the ground to receive signals from satellites

enhanced telecommunications services: a service which adds value to a basic telecommunications transmission services — e.g. a telephone answering service

microwave: a transmission technology which uses radio frequencies to transmit voice, data or video from one place to another; operates only on a line of sight basis

Nielsen Task Force: a federal government Task Force on Program Review established in September 1984 under the direction of the Honourable Erik Nielsen, M.P. to examine all federal government programs with the objective of better service to the public and improved management of government programs

Northern Native Broadcast Access Program: under the authority of the federal Department of the Secretary of State and the federal Broadcasting Act, federal financial assistance is provided to northern native communications societies for establishing production facilities in the north which will ensure that a significant amount of broadcast programming relevant to the needs of native people is available on radio and television

over-the-air: television or radio channels received using an antenna are said to be received over-the-air; as opposed to off-air, that is by satellite or cable

PABX: a central switchboard for telephone traffic operated by the customer

private long distance telephone systems: a telephone network used to transmit the telephone traffic generated solely by one user; this network does not allow the customer to both originate traffic from and terminate traffic in the regular telephone network

public long distance network: the long distance network provided by telephone companies which allows any telephone customer to call any other telephone customer

rate rebalancing: the idea that local telephone rates should increase and long distance telephone rates should decrease

rebroadcast repeaters: television or radio transmitters that are fed by microwave, satellite or by the reception of signals off-air; used to expand the availability of a channel beyond the area where it would normally be received — i.e. to repeat the service outside its originating area

satellite: powerful receiving and transmitting technology located in orbit around the earth

scrambled: television signals which have been distorted so as to discourage viewing by all but those customers who have a decoding device; this can be done locally to protect the signal from being received by non-subscribers and it can be done on the satellite to restrict reception of the satellite signal

sharing and resale: occurs when a single telecommunications service is acquired and used by more than one customer; sharing or resale arrangements are negotiated between the customers themselves

system interconnection: occurs when one telecommunications system interconnects its lines to another for the purpose of accessing customers served by that system

tariffs: the terms and conditions (including rates) under which telecommunications services are sold

teleconference: a conference among people remote from one another who are linked by telephone or television; it can extend from audio linkage only, to one way video and two way voice, to two way audio and video

telecommunications: the transmission of voice, data and video by electronic means; broadcasting is a specialized form of telecommunications whereby the transmission is intended for reception by the general public

telecommunications carriers: the companies who provide telecommunications services and who, by law, may carry but not alter or originate traffic

terminal attachment: the attachment of terminals — i.e. telephone sets — to the telephone system

terrestrial transmission facilities: transmission systems using wires or microwave as opposed to space facilities such as satellite

transponder: receive and transmit equipment located in a satellite for the transmission of one satellite channel; each satellite contains many transponders/channels

trunking: the carriage of telecommunications traffic between local systems

TVRO antenna: a dish shaped antenna designed to receive television and radio signals from a satellite

underserved community: an area where two or fewer English-language television channels are available to the viewer

unscrambled: television signals which are not coded, and can therefore be viewed by customers without the use of specialized decoding hardware

uplink: the electronic facility and antenna needed to transmit a signal to a satellite

VHF mobile radio system: a radio system providing voice links between mobiles, work camps and headquarters using Very High Radio Frequencies (VHF)

videotex: a generic name used to describe an interactive visual information system in which data is transmitted from a computer network over telephone or cable-television lines and is displayed on a subscriber's television or computer terminal screen

DISCUSSION PAPER

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BROADCASTING AND TELECOMMUNICATIONS

PART II: POLICY OPTIONS

YUKON · 2000

Toward a Communications Policy

Yukon

Community and Transportation
Services

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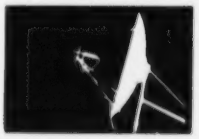

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Foreword

Communications has a pervasive influence on all aspects of modern society.

Broadcasting and telecommunications systems and services have significant and ongoing social, economic and cultural impacts. In early 1986, the Government of the Yukon began to look at options for upgrading its VHF Mobile Radio System, it quickly became clear that a decision in this area could have far reaching effects and should, therefore, be made within the context of a communications policy framework.

At the first formal Yukon 2000 workshop held in Faro in June 1986, communications was identified as an essential building block for building and developing our social and economic structure and improving our quality of life. Participants at the Yukon 2000 Fall Conference held in November 1986, saw communications as an activity which could influence and assist development across a number of sectors including mining, tourism and cultural industries. Therefore, an integrated and comprehensive communications policy can be a key component of our efforts to develop a secure economy and a stable society in the Yukon.

As a first step in involving all Yukoners in the formulation of an integrated Yukon communications policy, a Background Paper entitled ***Broadcasting and Telecommunications (Part I: Facts, Figures and Definitions)*** has been prepared to accompany this Discussion Paper on Broadcasting and Telecommunications Policy Options.

The Background Paper describes the current Yukon and Canadian communications environment. It addresses a number of current issues for Yukoners, such as the quality of the telephone service provided and the rates charged by NorthwesTel, the nature of the radio and television services provided by the CBC, and increased choice in broadcasting services in communities throughout the territory.

This Discussion Paper describes a number of policy options which range from maintaining the status quo to defining and implementing policies designed to achieve a much higher level of broadcasting and telecommunications services in the territory. Each option describes a course of action. In addition the order of magnitude of costs as well as the impact on the public and private sector are presented. The range of options presented is by no means exhaustive. It is possible, for instance, to combine elements from one option with that of others to form new options.

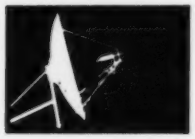
This Discussion Paper identifies the communications problems currently facing Yukoners. We are suggesting some solutions to these. However this analysis of the problems and selected solutions is not necessarily exhaustive. We are very interested to hear your views and comments on any other communications issues and any problems and solutions that you may identify. Finally, we are soliciting your comments on these two papers.

We look forward to a lively and informative public discussion. We believe that, together, we can chart a course to a Yukon communications policy which reflects our special and unique needs and interests. This policy will also have to be flexible enough to respond to the changes in technology that are inevitable as well as to the economic, social and cultural changes that will take place in the Yukon as we plan our future into the year 2000.

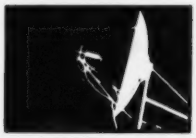
Piers McDonald
Minister of Community and Transportation Services
January, 1987

'Over the next few years, Canada must overhaul many aspects of broadcasting and telecommunications policy to accommodate the new age of broadcasting. After a first age dominated by over-the-air radio and a second dominated by over-the-air television, we are already into a third age characterized by integrated communications. New systems for the delivery, production and reception of programming are greatly expanding the capacity for selectivity, the technical quality, and the scope of service."

Report of the Task Force on Broadcasting Policy, *(the Caplan/Sauvageau Report)* *September 1986*



The Need for a Yukon Communications Policy



The authors of the *Caplan/Sauvageau Report* have pointed out that rapid technological development has changed the face of Canadian broadcasting. Over-the-air transmission of radio and television services remains at the heart of this system. These relatively simple technologies are complemented by the use of satellites, cable distribution systems and videocassette recorders to deliver an ever increasing array of programs and services.

Changes in the area of telephone systems and services have been as significant. Driven primarily by the marriage of telecommunications and computer technologies, many new services are available to transmit and receive a wide variety of information at ever faster speeds and with higher quality.The distinction between broadcasting and telecommunications is becoming blurred. Broadcasters are increasingly making use of telecommunications technologies such as satellites to distribute their services. Telephone companies have introduced new transmission technologies capable of carrying video as well as voice and data. The authors of the *Caplan/Sauvageau Report* correctly suggest that an integrated communications system is emerging.

The impact of this integrated communications system cannot be assessed merely in terms of communications technologies or services. For example, a broadcasting system which delivers programming from across the country and around the world and which in addition also enhances the exchange of information within and between small communities, must be seen as having significant social and cultural impacts. Furthermore, a telecommunications system which contributes to the efficiency and productivity of businesses must have significant economic impact.

In light of the pervasive influence of communications in modern society, governments, local communities and individuals who are planning for, and actively seeking to shape their own future must see communications as an instrument of economic, social and cultural development. This is why the Government of the Yukon is developing an integrated and comprehensive communications policy for the Yukon that takes into account the stated needs, desires and aspirations of Yukoners.

Components of a Communications Policy

This Discussion Paper outlines the following eight (8) components that constitute the broad range of activities which reflect a comprehensive communications policy for the Yukon.

1. Broadcasting

Broadcasting is a specialized form of telecommunications involving the transmission of information intended for the general public. Broadcasting includes radio and television stations such as CKRW, CHON-FM, the CBC television and radio services and related operations such as cable TV service.

2. Telecommunications

Telecommunications is defined as the transmission of voice, data and video by electronic means through the use of radio frequencies, land-based wires or glass fibre. Telecommunications services such as telephone, telex and mobile radio are provided by telephone companies such as NorthwesTel, telecommunications companies like CNCP and various private or public companies or agencies.

Companies, such as telephone companies, that provide telecommunication services which are available to all are called common carriers.

The Yukon's Very High Frequency Mobile Radio System (VHF Mobile Radio System) is owned and operated by the Department of Community and Transportation Services. It provides mobile radio services to a specific set of public sector users in the Yukon. This is an example of a private telecommunications carrier.

3. VHF Mobile Radio System

The VHF Mobile Radio System which is owned and operated by the Department of Community and Transportation Services is an important communications network used by a number of government departments and public agencies operating in the territory. It is used for such things as relaying work assignments and emergency communications where other communications services are not available.

4. Federal-Provincial--Territorial Consultation

Due to the high public profile of communications and split federal and provincial control in the area of communications, most governments in Canada have had an active and ongoing interest in communications policy-making and regulation. In recent years, both the Canadian Radio-television and Telecommunications Commission (CRTC, an independent federal regulatory agency) and the Minister of the federal Department of Communications (DOC) have welcomed provincial and territorial participation in the federal regulatory process and the development of national communications policy.

The Yukon government can bring a unique point of view to negotiations on the future of communications in Canada especially in the area of provision of television services to small communities and telephone long distance rates.

5. Industry & Community Liaison

This involves regular discussions with members of the broadcasting and telecommunications industries as well as periodic monitoring of their financial performance and the type and level of services which they provide. In addition, this could include the monitoring of trends in public opinion through the processing of comments and complaints and public opinion polling related to the provision of communications services.

In the Yukon, this type of consultation could focus on the quality, availability and cost of broadcasting and telecommunications services and the extent to which these services are meeting the needs of Yukoners.

6. *Distance Education*

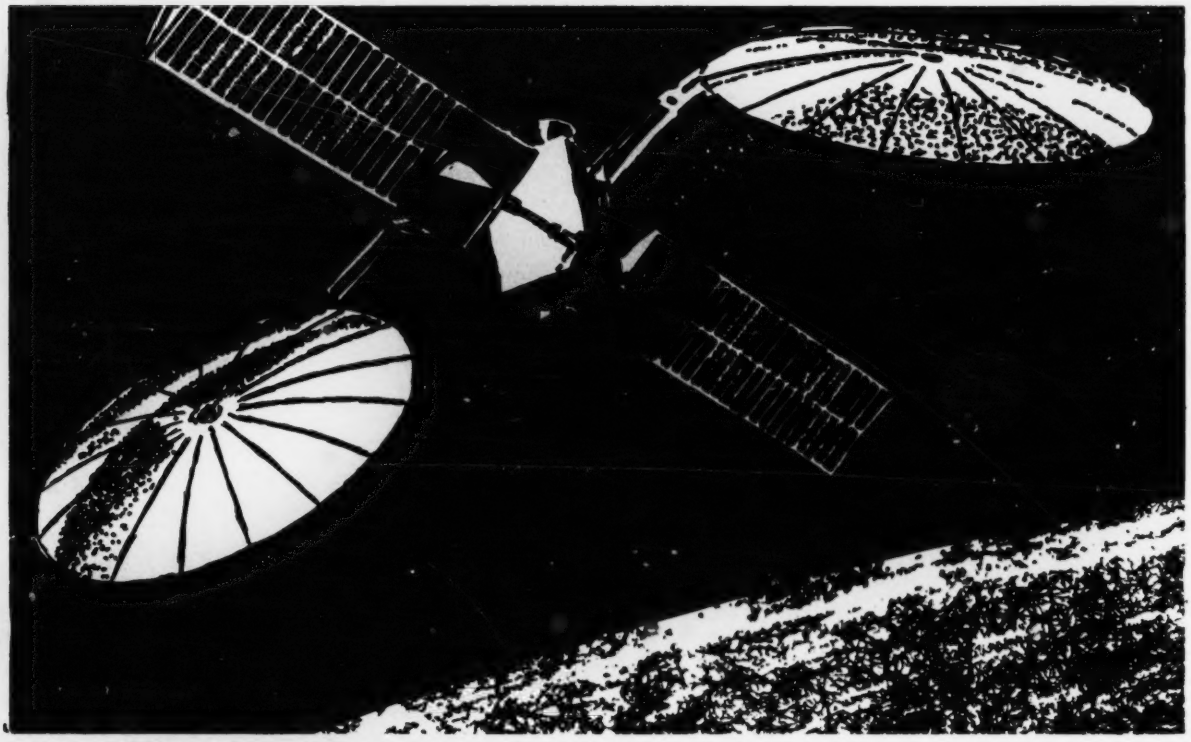
Distance education includes the use of television, radio, telephone and satellite-linked computers to teach and train students who live in remote communities. It is possible, for instance, for a student to complete a course through the use of such delivery mechanisms as videotex, telephone conference calls and one way television lectures delivered by satellite without ever having to leave his or her community. This type of electronic educational system has the potential to revolutionize education in the Yukon. However, the equipment and program development necessary for this type of system are expensive and must be weighed against other educational requirements.

The Department of Education is examining the benefits and costs of providing education and training to remote communities through the use of communications technology. A Yukon communications policy could respond to those distance education needs that might be identified by the Department of Education in the future.

7. *Culture*

Communications policy often is seen as including the area of culture. This involves making policy for such cultural industries as live theatre, film and sound recording, and publishing.

The delivery of Yukon government programs related to culture is the subject of a separate review process currently in progress and, therefore, will not be discussed as a major component of a Yukon communications policy at this time.



Artist's conception of MSAT (Mobile Satellite) in geostationary orbit.

8. *Technological Development*

Over the years, communications policy-makers have taken an active interest in communications technology. This interest has ranged from the technical certification of communications equipment to the stimulation of new concepts such as office automation.

Given the important role played by satellites in the provision of broadcasting and telecommunication services in the north, federal policies and programs relating to this technology should be of particular interest to Yukoners. In addition, special attention could be focused on developments in communications technology designed to deal with the particular problems in remote and northern areas. Such technologies include satellite-delivered mobile radio services (MSAT) and trail radio (a radio communication technology designed to link communities and persons located in remote and isolated areas such as a trapper attending his or her trapline).

Spectrum Management

The radio spectrum or range of frequencies includes all radio frequencies which may be used to transmit information. Under the *Radio Act*, the federal Minister of Communications and the federal Department of Communications are directly responsible for the allocation and assignment of these frequencies. Radio frequencies are assigned to specific users based on policies designed to establish and enforce national technical standards and to promote technological innovation and efficient use. In the Yukon, licensed users of radio frequencies include broadcasters, taxis and NorthwesTel. The VHF Mobile Radio System and the Community Radio and Television System administered by the Yukon Department of Community and Transportation Services are also subject to licencing by the federal Department of Communications.

It is clear from the above discussion that spectrum mangement is crucial for the smooth functioning of communication systems using radio frequencies. However, spectrum management is the responsibility of the federal government and will not be a component of a Yukon communications policy.

Communications Policy Options

Goals and Objectives

In the Speech from the Throne on March 13, 1986 the Government of the Yukon set out the fundamental goals which it would use to guide its actions. These goals include:

i) targeted job creation;
ii) economic diversification with local control;
iii) open and accountable government;
iv) equality of opportunity; and
v) improving the quality of life for all Yukoners.

Specific policy objectives must be consistent with these goals. The following seven points could be included in a final communications policy for the Yukon:

i) ensure a satisfactory level of broadcasting and telecommunications services for Yukoners;
ii) generate new employment opportunities, and support and encourage local economic activity through the continuing development of a communications industry in the Yukon;
iii) support and strengthen the Yukon business environment through enhanced availability and quality of communications services;
iv) use emerging communications technology in the most appropriate manner for individuals, businesses and communities in the Yukon;
v) preserve and enhance local and native culture;
vi) support improved access to fundamental government services such as education; and
vii) organize, maintain and operate an integrated communications network to meet the communications needs of the Government of the Yukon and other public agencies operating in the territory.

The extent to which these policy objectives could be incorporated into a Yukon communications policy will be discussed in the next portion of this Discussion Paper.

Discussion of the Communications Policy Components

Four communications policy options are presented in this Discussion Paper. The four options range from maintaining the status quo to defining and implementing policies designed to achieve a much higher level of broadcasting and telecommunications service in the territory. For each option, specific service improvements are identified, various methods for implementing these improvements are discussed and, where possible, the order of magnitude capital and operating costs are provided.

The range of options presented is by no means exhaustive. It is possible, for instance, to combine elements from one option with that of others to form new options.

1 Policy Option 1

Under this option, the Government of the Yukon would take the position that while inequities do exist in the availability of broadcasting and telecommunications services in the territory, it is neither appropriate nor necessary for the Yukon government to establish a communications policy designed to deal with them. The Government of the Yukon would base this option on the following principles:

Policy Principles

1. ***The existing access to broadcasting and telecommunications services and the level of Yukon produced radio and television programming are acceptable.***

2. ***Changes in the level of broadcasting or telecommunications services in the Yukon shall be left to the federal government, communities and the local communications industry.***

3. ***The VHF Mobile Radio System shall provide a reliable communications system for the operational requirements of the various government departments and agencies that use the system.***

Broadcasting

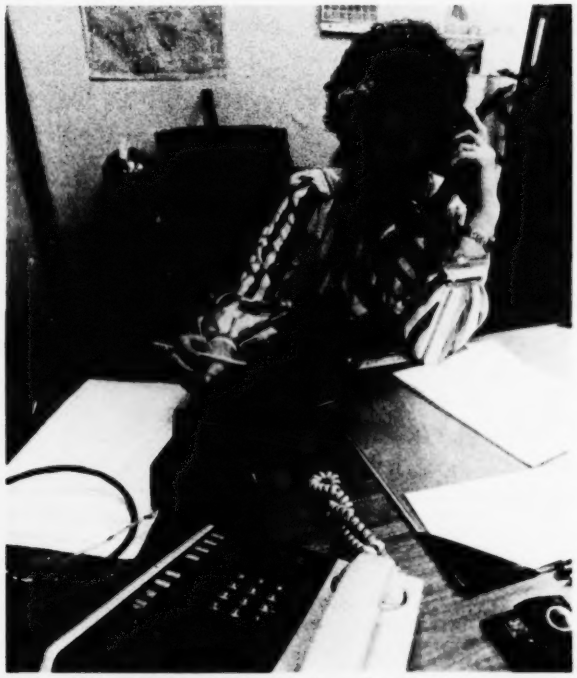
The current level of service provided by the Community Radio and Television Service would continue. Communities receiving CBC Northern Television Service through rebroadcast repeaters (for example, Burwash Landing, Destruction Bay, Carcross and Ross River) would continue to have a less reliable service.

Additional television signals could be provided through the shared use of existing TVRO facilities in communities. Current Yukon government policy permits sharing of the Community Radio & Television System TVRO facilities for this purpose on the basis that the additional equipment is purchased and operated by the local communications society.

Other than this, any increase in the availability of television and radio services or in the amount and quality of radio and television programming would be a function of changes introduced in the federal policy and regulatory environment or the result of initiatives by local communications interests.

The *Caplan/Sauvageau Report* has recommended that special policies be established to promote the increased availability of the CANCOM service in underserved areas. However, there is no indication at present that these recommendations will either be accepted or acted upon by the federal government. Under this option no action would be taken by the Government of the Yukon to press for implementation of increased availability of CANCOM services in underserved areas. Therefore, it is likely that the existing inequities in the availability of broadcast services among communities in the Yukon will continue.

Private backyard television-receive-only satellite dish. (TVRO).



The VHF Mobile Radio System base station in the Lynn Building, Steele Street, Whitehorse.

Telecommunications

This option would accept existing service levels in the territory and all new initiatives would be left to the federal government and/or the private sector for implementation. The Yukon government's role of representing Yukoners and protecting Yukon interests within the federal regulatory regime will be sharply limited. The absence of a Yukon communications policy will mean that such issues as extension of basic telephone service and the introduction of new voice and data technologies will be resolved without significant input from the Yukon government.

VHF Mobile Radio System

The VHF Mobile Radio System is reaching the end of its useful life as a communication link throughout the territory. The decision to either replace the existing system with a new, more modern one or to upgrade the existing system will be made without the benefit of an integrated Yukon communications policy that would consider the relationship between this system and other elements of the Yukon communications environment (for example: broadcast, telecommunications, distance education). This, in turn, may inhibit contributions that the system could make to broader and more fundamental communication goals. However, as a minimum, the decision that is taken will ensure that a reliable communications system is available to meet the identified operational requirements of the various government departments and agencies using the system.

VHF Mobile Radio System mountaintop repeater installation, Carcross.

Federal-Provincial-Territorial Consultation

Federal, provincial and territorial ministers responsible for communications have begun a process of consultation for the development of a national telecommunications policy that is sensitive to regional concerns. Under this option, the Government of the Yukon will not be able to assess the full implications for Yukoners of the major policy and regulatory changes which are now under discussion in the national forums. These issues include:

- the sharing of responsibilities for the regulation of telecommunications between the federal, provincial and territorial governments;
- the extent to which national telecommunication policies will be established for terminal attachment;
- the interconnection of one telecommunication system to another; and
- the extent to which governments agree with a policy on rate rebalancing or the idea that local telephone rates should increase and long distance telephone rates should decrease.

Distance Education

Should the Department of Education determine that distance education is to play a major role in provision of educational services to Yukoners, then this policy option would leave the Government of the Yukon without a direct role in the Yukon communications environment. As a result, the ability of the Yukon government to use broadcasting, telecommunications or the VHF Mobile Radio System in an integrated manner to deliver government services such as education and training courses to students living in remote communities will be limited.

Other Policy Components

There would be no significant or sustained activity respecting the Industry and Community Liaison and Culture and Technological Development components under this policy option.

Conclusion

The responsibility for changes in the Yukon communications environment would be left to private enterprise, the federal government and local communications interests.

This option limits the government's opportunity to reduce the existing service inequities thereby hindering its effort to provide equality of opportunity and access for Yukoners. It also restricts the government's ability to use communications as an instrument to support ongoing efforts to establish a long term strategy for economic development and to make improvements in the overall quality of life in the Yukon.

Policy Option 2

2

Under this option, the Government of the Yukon would take the position that its responsibilities with respect to communications do not extend beyond ensuring that all Yukon communities have access to the CBC television and radio services. It would focus its attention on improving the level of service provided by the Community Radio and Television System. Other elements of broadcasting and telecommunications would not be addressed. The policy principles for this option would be:

Policy Principles

1. ***Wherever practical the Yukon government's Community Radio and Television System shall be improved to provide better quality CBC Radio and Television service to all communities.***

CKRW radio on-air control room, Whitehorse.

2. ***The existing level of service for the remainder of the broadcasting and telecommunications services and Yukon radio and television programming in the Yukon is acceptable.***

3. ***Other changes in the level of broadcasting or telecommunications services in the Yukon shall be left to the federal government, communities and the local communications industry.***

4. ***The VHF Mobile Radio System shall provide a reliable communications system for the operational requirements of the various government departments and agencies that use the system.***

Broadcasting

The Community Radio and Television System currently provides CBC television service to Burwash Landing, Destruction Bay, Carcross, and Ross River via rebroadcast repeaters which require a high level of maintenance. These sites are located on mountaintops remote from the communities and television reception from these repeaters often is of poor quality due to adverse weather conditions at the site. These same weather conditions make it very difficult to get access to the site when maintenance is required.

In an effort to bring television reception in these areas up to a standard equivalent to that in other Yukon communities, the Government of the Yukon could replace the rebroadcast repeaters with TVRO's that would receive the CBC signal directly from the satellite. These facilities and their accompanying television transmitters could be located closer to the community where road access is possible. This improvement to the Community Radio and Television System would involve an estimated capital cost of about $300,000. These costs would be offset to some extent by decreased annual operating and maintenance costs.

However, while this modification to the Community Radio and Television System would improve service to the communities noted above, residents remote from these communities might lose service. This would occur because the relocated transmitter would be located at a lower elevation. If it were necessary to maintain the mountaintop rebroadcast repeater in addition to installing a TVRO in the community, the total cost would increase significantly and make this proposal less attractive.

The production of radio and television broadcast material would be left entirely in the hands of the federal departments and agencies that currently control these matters.

Telecommunications

As in the case of Option I, this option would not provide a policy framework for the Government of the Yukon to participate in the federal regulatory process. This option would limit the government's ability to address such issues as extension of basic telephone service, quality of service, provision of new services and the rates charged for these services in the Yukon.

VHF Mobile Radio System

The absence of an integrated Yukon communications policy will leave decisions about replacement or upgrading of the VHF Mobile Radio System without a framework in which to consider the other components of communications (for example: broadcast, telecommunications, distance education, et cetera). However, the decision that is made will ensure that a reliable communications system is available to meet the operational requirements of the users of the system.

Removing ice from the Carcross mountain top rebroadcast repeater owned and operated by the Government of the Yukon to repeat the CBC service originating from Whitehorse.

Federal-Provincial-Territorial Consultative Process

Without a clear policy framework and the mandate to play an active role in national policy-making forums, the effectiveness of the Yukon government in the federal-provincial-territorial consultative process on telecommunications will be limited.

Distance Education

The absence of a clear and comprehensive Yukon communications policy will limit the ability of the government to make use of broadcasting and telecommunications to provide for the delivery of such government services as education and training programs to students living in remote communities.

Other Policy Components

There would be no significant or sustained activity in Industry and Community Liaison, Culture, and Technological Development components under this policy option.

Conclusion

This option would not directly address the issue of increased choice in television services in those communities where only CBC television and radio are available. However, all Yukon communities would, under this policy option, have good quality reception of the CBC North TV signal and, as well, all those underserved Yukon communities would have the basic satellite earth reception facility in place as part of the Community Radio and Television System. Under current policy it is possible to share this system with other users providing licenced broadcast services. Therefore a community could purchase and install equipment for receipt of additional TV signals and make use of the existing TVRO and equipment shelter.

The Government of the Yukon would undertake few, if any, initiatives to influence the federal government to fully and properly support the local broadcasting or telecommunications industry. Decisions concerning the VHF Mobile Radio System replacement or upgrading would be made without full consideration of the benefits to other areas of the Yukon communications environment.

3 Policy Option 3

In addition to providing improved CBC North TV signals in the communities of Burwash Landing, Destruction Bay, Carcross and Ross River as envisaged under Option 2, the Government of the Yukon would go further and take the position that all Yukon communities should have access to an increased level of broadcasting and telecommunications services. As well, the Government of the Yukon would actively participate in the federal regulatory process and national policy-making forums. This option, then, would be based on the following principles:

Policy Principles

1. *All Yukon communities shall have access to all three locally produced radio services and at least two entertainment television channels.*

2. *The Government of the Yukon shall work with the federal government, the CBC and others in order to increase the Yukon television programming available for viewing by both Yukon and national audiences.*

3. *Wherever practicable, all Yukon residents shall have the opportunity for access to basic telephone service at fair and reasonable rates.*

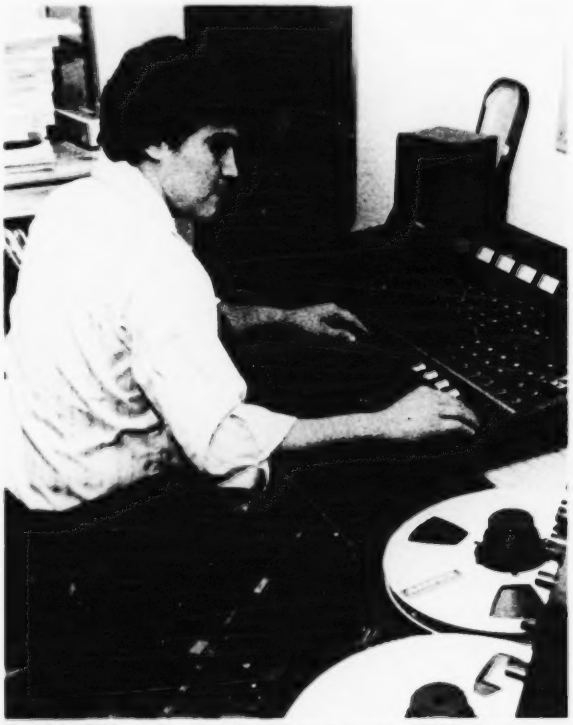
4. *The VHF Mobile Radio System shall provide an enhanced communications system for the operational requirements of the various government departments and agencies that use the system.*

5. *The Government of the Yukon shall actively participate in the federal regulatory process and the development of national communications policy.*

6. *Consultation with the communications industry, community and business groups and individuals interested in communications issues shall be an ongoing activity.*

7. *Communications technology advances shall be monitored so that opportunities for contributions by the communications program to other government goals can be identified.*

Broadcasting



CHON-FM radio on-air control room, Whitehorse.

Radio Services

With respect to radio services, the Government of the Yukon could decide to encourage the use of the Community Radio and Television System to extend the combined CHON-FM/CKRW services to those few communities where they are currently not available. These communities include Beaver Creek, Destruction Bay, Elsa, Stewart Crossing and Keno City.

The capital cost for extending this service would vary considerably depending on the suc-

Television-receive-only satellite dish (TVRO) Ketza River Mining Camp.

cess of obtaining suitable agreements for shared use of TVRO's already in place in the communities. The actual financial burden could be carried by the provider of the signal, the community itself, the Yukon government under the Community Radio and Television System or by any combination of the above.

If this extension of radio services were to be undertaken, all communities in the Yukon would have access to the three local radio services: CBC, CHON-FM and CKRW.

Television Services

Five methods for providing additional entertainment television channels in Yukon communities are outlined for discussion purposes.

1. Advocacy Role

The Government of the Yukon could actively lobby the federal Department of Communications and the CRTC to implement the recommendations of the *Caplan/ Sauvegeau Report* and to undertake any other measures which might reduce the cost of providing additional television channels via CANCOM to underserved communities.

In addition, the Yukon government could provide assistance in several ways. It could help identify possible local, territorial or federal sources of funding to put a delivery system in place. The government could assist in developing an appropriate community organization to operate the delivery system. Finally, it could provide help to the communities to identify the demand for additional broadcasting services, the particular preferences for that community, and

the appropriate delivery system or mix of systems that would best meet the needs of the community. This approach has worked well in the Province of Saskatchewan where a community handbook has been published by the provincial government to assist small communities in acquiring more television services.

The Yukon government would cover the staff salaries and minor expenses necessary to undertake this advocacy role. The actual costs of providing the increased television services would be set through the resulting federal government policy but would almost definitely involve a user charge.

2. Share Community Radio and Television System

The Government of the Yukon could simply continue its policy of sharing the Community Radio and Television System with local community organizations who wish to provide additional licenced TV broadcasting services. This method is proposed for Haines Junction and is already in use in Carmacks. Local communications societies in many communities in the Northwest Territories have received licences to rebroadcast the CTV service from the CANCOM package via shared use of facilities owned by the Government of the Northwest Territories.

The municipal government or local communications society in each community would purchase and attach its equipment to the satellite dish that is used to deliver the CBC Northern Television Service. The local group would be responsible for all of the capital, operating costs and monthly CANCOM fees associated with providing an additional entertainment television channel.

The actual capital cost to the community organization would be approximately $8-12,000 assuming that an existing TVRO facility is in place and could be shared. If an existing TVRO facility is not in place there would be an additional cost of between $40-60,000 to establish a new TVRO (the cost is heavily dependent on site location and access, and the quality of the equipment used).

If the proposal, contained in Option 2, for using the Community Radio and Television Service to provide TVRO's to serve Burwash Landing, Destruction Bay, Carcross and Ross River with CBC North TV was adopted this would make the implementation of additional entertainment TV channels in these communities much easier for community groups to handle.

3. Expand Community Radio and Television System

The Community Radio and Television System could be used by the Government of the Yukon as the vehicle to deliver a second entertainment television channel in all those unincorporated communities where this service currently is not available. The delivery of the CTV service provided by BCTV as part of the CANCOM package would complement the television service provided by the CBC and, in many communities, would double the number of television channels that are available.

Capital funding grants provided to the municipalities could be used to cover the capital costs of providing additional television services if the municipal council wished to increase the number of television channels available in the community. For the unincorporated communities, the capital costs of this method would be paid for by the government and are estimated to be in

the order of $700,000. Operating costs and CANCOM fees could be paid by the Government of the Yukon or could be the responsibility of the municipal government or a local communications society in each community.

However, it should be noted that the Northwest Territories government and the provincial governments have tended to avoid direct involvement in the extension of private entertainment television services. Moreover, such an initiative could preclude private sector initiatives to provide additional television services in the future. The fact that cable television subscribers in the larger Yukon communities must pay monthly fees for these additional services must be taken into consideration if the provision of additional television services in the remaining communities is to be provided without a user charge.

4. Provision of Government Grants or Loans

The Government of the Yukon could provide financing in part or in whole through grants or loans to community organizations or to private sector entrepreneurs who are interested in providing additional user pay entertainment television channels in underserved communities. This additional television service would be operated independently from the Community Radio and Television System and would involve the establishment of additional local delivery systems in each community.

As these local delivery systems would have to be designed to limit access to the service to those households in the community willing to pay for the additional television service, the delivery system would have to consist of either a standard cable television system or a scrambled over-the-air broadcast system.

Current economics and the general low density of households in the majority of Yukon communities indicate that cable television systems would not be feasible in the smaller communities unless some major economy of scale could be brought to bear. The cost of providing a second TV entertainment channel via scrambled over-the-air signals to the remaining underserved communities has been estimated to be in the order of $1,650,000.

While this method would not directly involve the Yukon government in providing service, the government would incur substantial capital costs either in the form of loans or grants and this could discourage future unassisted community or private sector initiatives in many communities. The extent of the cost to the Government of the Yukon would depend on whether the government were providing loan funds or grants, on the funding ceiling which was established, and on the demand for this form of assistance.

5. Extension of Additional Channels

Once the availability of a second entertainment television channel is established, the Yukon government could focus on the extension of additional entertainment channels. This might be accomplished through the Community Radio and Television System by allowing either local communications societies or local entrepreneurs to attach the additional equipment necessary to receive and transmit the remaining CANCOM services. For example, this model will soon be implemented in Haines Junction where the local community has purchased equipment and plans to pay the CANCOM fees for the delivery of four television channels.

In either case, except for the opportun-

ity to share facilities, the responsibility for providing television services beyond the second television channel might best be left to local community or private sector initiatives. The Government of the Yukon could play an active role in influencing the federal government to adequately support local community or private sector initiative.

Television Programming

There are three methods that could be adopted by the Government of the Yukon to increase the availability of local television programming under this option:

1. Advocacy

The Yukon government could work with the CBC and other federal departments and agencies to encourage the CBC to devote more resources to the production of local and regional programming for the Northern Television Service in an effort to make the service more relevant to Yukoners.

In addition, the Yukon government could focus on specific improvements in the CBC Northern Television Service such as:

a) the establishment of a local and regional news service originating in the north; and
b) the production or acquisition and scheduling of other information and entertainment programming produced in the north.

These arguments were presented to the CRTC by the Government of the Yukon at the CBC television network licence renewal hearing held in Hull, Quebec in October, 1986. Under this option, such activities to influence federal policies by the Yukon government would continue.

The costs associated with an advocacy program would be borne by the Yukon government and would consist of staff salaries and expenses and the occasional use of specialized consulting services.

2. Yukon Participation in the Decision-Making Process

Progress in making the Northern Television Service more relevant to Yukoners and in providing a reflection of the Yukon for a national audience could be improved through the appointment of a representative from the Yukon to the CBC Board of Directors. This action would significantly improve the access of Yukoners and other northerners to the decision-making process in matters relating to CBC programming and broadcasting in general.

3. Increased Government Use of Existing Distribution Systems

The Yukon government could encourage increased local audio and video production and access to public information through increased use of existing distribution systems. Currently, the government makes only limited use of commercial and community radio and television for the distribution of public information, relying instead on print material. Under this option, some public funds currently devoted to the printing of materials could be directed toward the production of audio and visual materials for distribution on existing broadcasting services available in the territory.

This method could provide economic stimulus to existing private production houses, helping them to expand business and create increased employment opportunities. Local graphics and printing businesses would not necessarily see this shift in public spending as a threat, but rather could view it as an opportunity to expand into the advanced video and computer graphics field.

Telecommunications

Under this option, methods to ensure the existing availability and expansion of a basic level of telecommunications service in the Yukon would relate primarily to concerted and ongoing

involvement in the federal policy and regulatory environment.

Rate hearings and related regulatory proceedings with respect to NorthwesTel give the Government of the Yukon an opportunity to provide input on such issues as access to basic telephone service for residents of the territory, quality of service and rates for service. In these cases, the government may be able to assist the CRTC by more clearly identifying issues of local importance and by discussing solutions which better reflect local conditions.

In addition, a number of broad telecommunications policy issues are of interest to the Yukon. Given the much higher dependence of NorthwesTel on long distance revenues than other telephone companies in Canada, the issues of the rebalancing of local and long distance telephone rates and competition in the provision of long distance telephone services will be of particular importance in the territory.

Again, as with all advocacy programs, the costs associated with this activity will be borne by the Yukon government and will consist largely of staff salaries and expenses and specialized consultant fees.

VHF Mobile Radio System

In addition to providing voice communication for users, the VHF Mobile Radio System could be improved to provide services not presently available with the existing system. Transmission of data between headquarters areas and remote work camps and the ability to use the system for a private conversation would be major improvements to the existing system.

It is to be noted that the establishment of a Yukon broadcasting and telecommunications policy framework which includes specific methods for achieving policy objectives will provide the government with an additional tool with which to assess the various proposals for improving the system. Option 3 therefore, will provide a better foundation than either Option I or 2 for making decisions about the VHF Mobile Radio System upgrading or replacement.

Federal-Provincial-Territorial Consultation

The process of federal-provincial-territorial consultation into telecommunications is already underway. As noted under Option I, major policy and regulatory changes are being discussed in this forum. Among these are the realignment of roles and responsibilities for telecommunications, the standardization of policy with respect to the attachment of equipment to the telephone system, the application of national policies concerning the interconnection of one telecommunications system to another, and the rebalancing of local and long distance telephone rates.

It is likely that in the light of the *Caplan/Sauvegeau Report* and the *Nielsen Task Force* a parallel consultative process will develop to examine the area of broadcasting. The ability of the Government of the Yukon to participate effectively in these processes would be enhanced by the establishment of clear broadcast and telecommunications service objectives within a comprehensive Yukon communications policy.

Industry & Community Liaison

As has been noted in the Background Paper, the level of expenditure in the Yukon for broadcast and telecommunication services is approximately $2l million and the approximate number of employees is 396.

A necessary part of the level of activity that is contemplated in this option will be to undertake ongoing consultation with Yukoners involved and interested in communications. Communications policy cannot be viewed as a static instrument because it must change as technology and the needs of the Yukon change. Therefore a major focus for the Yukon government staff working on a communications program will be to maintain a freeflowing information and idea exchange

with the communications industry, community groups, business groups and individuals who have an interest in communications.

Distance Education

Under this option, the Government of the Yukon would be able to exert some influence to increase the availability of both broadcasting and telecommunications services as well as the increased availability of local television programming.

A benefit of the increased access to such services could be to provide a good foundation for the educational and training needs of students living in remote communities. Through cooperative efforts with the Department of Education, planning could be undertaken for the delivery, for instance, of educational and training courses by electronic services such as two way audio teleconferencing from Yukon College to community learning centres.

Culture

As was discussed in the section on the Components of a Communications Policy, culture is the subject of a separate review process and as a result is not a major part of this policy option. However, it is to be noted that adoption of a communications policy as envisaged under this option will permit consideration of cultural aspects that are related to communications at a later date if it should be decided that this is appropriate.

Technological Development

By playing a larger role in the communications environment, Yukon government personnel would become exposed to the major shifts and advances in communications technology. This will provide for faster adaptation and utilization of this technology to achieve the communications policy goals.

Conclusion

This option would allow the Government of the Yukon to play a direct role in addressing current problems concerning the availability of broadcasting services and local Yukon television programming. The government could also address the gaps which exist in access to, and quality of, telephone service in the Yukon.

By providing for ongoing consultation between the government and Yukoners interested in communications, the government will be in a better position to respond to the communications needs of Yukoners and determine whether the local service providers are meeting these needs. This liaison will also assist the government in its role in the national policy-making and federal regulatory processes in ensuring that the special and unique needs of the Yukon are considered.

Improvements will be made to the level of service provided by the VHF Mobile Radio System. However, more importantly, this option provides an overall communications policy framework within which decisions can be made regarding the replacement or upgrading of the system.

By monitoring changes in communications technology as envisaged under this option, the government will be able to respond more quickly to the adaptation and utilization of this technology to help achieve communications policy objectives.

Finally, this option provides for the establishment of an integrated broadcasting and telecommunications service infrastructure within which it is possible to make further improvements as the demands of Yukoners for communications services increase and change with time.

This option would involve a significant increase in communications program activities. Some of the costs of this program would be borne by the Yukon government and would consist of staff salaries and expenses as well as consultant fees. Additional costs could be incurred by government depending on the methods used for extending services.

Policy Option 4

4

Under this option, the Government of the Yukon would take the position that in addition to the increased level of communication services and direct government involvement in the federal regulatory and policy-making exercises included in Option 3, Yukoners should have access to a level of broadcasting and telecommunications services more closely equivalent to that available in other areas of Canada. This option would be based on the following principles:

Policy Principles

1. *All Yukon communities shall have access to all three locally produced radio services and at least two entertainment television channels.*

2. *The Government of the Yukon shall provide financial resources to increase the amount of Yukon produced television programming available for both the Yukon and national audiences.*

3. *Wherever practicable, all Yukon residents shall have the opportunity for access to basic telephone service at fair and reasonable rates.*

4. *Wherever practicable, Yukon businesses shall have access to specialized voice and data services at fair and reasonable rates.*

5. *Yukoners shall have access to a choice in telecommunication service providers consistent with any national telecommunication policy standards that may be established.*

6. *The VHF Mobile Radio System shall provide an enhanced communications system for the operational requirements of the various government departments and agencies that use the system.*

7. *The VHF Mobile Radio System shall also contribute to the overall communications policy objectives where this is economically and technically feasible.*

8. *The Government of the Yukon shall actively participate in the federal regulatory process and the development of national communications policy.*

9. *Consultation with the communications industry, community and business groups and individuals interested in communications issues shall be an ongoing activity.*

10. *Communications technology advances shall be monitored so that opportunities for contributions by the communications program to other government goals will be identified.*

Broadcasting

Most areas of the country currently have access to local television services provided by the CBC and private broadcasters. Many areas have access to an educational television service such as TV Ontario, Access Alberta and the Knowledge Network in British Columbia, all of which combine general education programming with more specific distance education projects.

While it may not be possible at this point to establish a Yukon television station, this option envisions the Government of the Yukon undertaking a comprehensive plan to support increased production of, and access to local television programming. This would involve three distinct but complementary initiatives.

1. Continue to Lobby CBC & CRTC

Yukon government communications personnel would continue to work with the CBC and the CRTC to increase the availability of Yukon programming on the CBC Northern Television Service. The costs of undertaking this activity would be borne by the government and would cover staff salaries and expenses and the use of specialized consulting services from time to time.

2. Active Government Support of Local Television Programming

The Government of the Yukon could actively support the development of Yukon television programming through commissioning, sponsorship or purchase of television programming for use on public and private distribution systems located in the north and elsewhere.

- Direct Commissioning of Productions

  For example, increased access to government information could be achieved through commissioning work from the local production industry on specific government initiatives or programs, and making this programming available on WHTV, the CBC Northern Television Service and other community distribution systems. In this instance, the government would determine program content and the production approach. Such action would enhance access to public information and stimulate the local production industry.

- Program Sponsorship

  The Government of the Yukon also could become involved in program sponsorship as a way of encouraging private producers to generate more Yukon television productions. Through sponsorship, the Yukon government would become a partner in a particular production. The government would contribute financial support to a production which it believed would be of benefit and interest to Yukon and/or southern audiences.

  For example, the Department of Education has recently granted $10,000 to a Yukon filmmaker for a film on three Yukon storytellers.

- Program Purchase

  As well, the Yukon government could become involved in the purchase of selected productions by the private sector in the Yukon. It is not contemplated that the Yukon government would be behind all, or even the majority of broadcast productions. In the environment envisioned under this policy option, there could well be a vital broadcast production industry. Government purchase and broadcast of the products of this industry to fulfill programming requirements in such areas as education or tourism would serve as a viable commercial outlet for the creations of local studios.

Clearly, each of these three methods of stimulating increased local television production in the Yukon will involve an increase in the expenditure of public funds. The level of the expenditure would depend on the level of activity chosen. However, to the extent that secondary markets develop for this programming in southern Canada or in other countries, these expenditures could decline over time and therefore, may be seen as longer term investments in the Yukon communications industry.

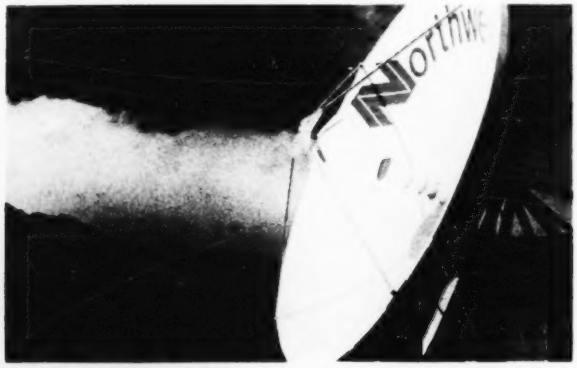
The Ross River community radio station.

3. Government Funding of Alternative Distribution Outlets

While it may be possible to distribute suitable programming on existing services, such as the CBC Northern Television Service, Yukon and perhaps federal government funding also could be made available to support other radio and television services in order to provide alternative distribution outlets. For example, should the British Columbia Knowledge Network educational

channel become available on a satellite channel that is easily received in the Yukon, it might be possible to include in this service programming originating in the Yukon. Alternatively, should the federal government choose to fund a separate non-CBC satellite service for the distribution of northern programming, it might be possible to include Yukon programming on this channel.

At this time it is not possible to state what the annual cost of this proposal would be as it would depend on the level of activity undertaken by the government and on the cost sharing arrangements that could be worked out between the various parties involved in distributing the programming.



NorthwesTel satellite telephone equipment Ketza River Mining Camp.

Telecommunications

Under this option, Yukon government participation in CRTC telephone rate hearings and related regulatory proceedings as described in Option 3 would continue.

In addition to tackling the issue of the rebalancing of local and long distance telephone rates, the issue of competition in the provision of long distance telephone services would be addressed.

Access to specialized voice and data telecommunications services presents particular problems in the Yukon. In many areas of the country, such services are provided on a competitive and incresingly deregulated basis with residents having access to the specialized services provided by both Telecom Canada and CNCP. In the Yukon, where both the CNCP and the Telecom Canada services will be offered by NorthwesTel, special care will be required in establishing a regulatory framework. In particular, it will be important to ensure that these services are offered on a basis comparable to that in other areas of the country where local residents benefit from competition in both pricing and service quality.

There are other aspects of competition in the provision of telecommunications services that impact on the Yukon. The most controversial issue is the provision of competitive long distance services to large businesses through the use of satellite technology. Such competition currently exists in the Yukon only on a limited basis; most Yukon consumers and businesses do not have easy access to a choice in telecommunications services.

Advocates of increased competition in the provision of telecommunications services argue that market mechanisms will ensure that telecommunications services are provided in a more flexible and innovative manner at significantly lower prices.

Opponents of increased competition argue that significant deregulation of telecommunications services and pricing will reduce the ability of telephone companies to extend telephone services to uneconomic areas and to maintain low local rates.

Today, competition is an emerging reality in the Yukon and, in the longer term, it may be desirable for Yukoners to have increased access to competitive telecommunications services. However, fundamental questions concerning the nature and extent of competition and the implications for basic telephone services in the north must be answered first.

This is an area where the Government of the Yukon could make an important contribution in a role as a full participant in the federal policy and regulatory process.

The costs of participating in these forums will include staff salaries and expenses and specialized consulting services fees.

A Government of the Yukon telecommunications operator uses the government's telex machine to transmit a message.

VHF Mobile Radio System

The decision on the proposal for improving and enhancing the services provided by the VHF Mobile Radio System will be made within the context of an overall communications policy framework and therefore will actively contribute to the overall communications policy objectives.

Federal-Provincial-Territorial Consultative Process

Under this option the government would continue to participate in the federal-provincial-territorial communications policy development process described in Option 3 in order to achieve the Yukon's communications policy objectives.

Industry and Community Liaison

This option will involve regular discussions with such members of the broadcasting and telecommunications industry as the CBC Northern Television Service and NorthwesTel. It will also involve monitoring their financial performance and the type and level of service which they are providing to Yukoners. Discussion with local community organizations and groups and individuals with an interest in the Yukon communications environment will be used to evaluate whether the broadcasting and telecommunication services available meet the needs and aspirations of Yukoners.

Distance Education

By substantially increasing the amount of local television programming available to residents of the territory and by providing for flexible and innovative telecommunications services, this option could increasingly help to meet the educational and training needs of students living in remote Yukon communities. Communications staff could work closely with the Department of Education to prepare the infrastructure necessary to deliver course work via a fully developed electronic distance education system.

At the same time, through cooperative efforts with the Government of the Northwest Territories and others, the planning could be undertaken for a northern educational television network. It would likely be many years before the Yukon could afford to participate in such a network however the initial planning steps could be undertaken at this time at reasonable costs. These costs would primarily be made up of salaries and expenses for the Department of Education personnel engaged in this work.

Culture

As discussed under Option 3, culture is the subject of a separate review process and therefore is not a major part of this policy option. It is to be noted that this option, like Option 3, would include sufficient flexibility for the incorporation of cultural goals that are related to communications at a later date if this is appropriate.

Technological Development

By having a well defined and active role in the communications environment, communications program personnel will be in a good position to monitor developments in communications technology and assess its potential for use in the Yukon to achieve the communications policy objectives.

Conclusion

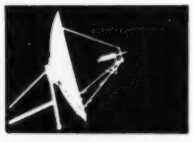
Under this option, the government has the opportunity to play a significant role in enhancing local television programming and production as well as distribution services.

This, in turn, could stimulate growth of the local communications industry, improve the quality of life for Yukoners, create access to educational services, and provide better coverage of local current events in the Yukon and local and native culture and lifestyles. The combined efforts of government, industry and Yukon residents under this option could lay the foundation for the long term future when it could become feasible to have a Yukon television network dedicated to the educational, informational and broadcasting service goals of the community in the next decade.

This option would work to eliminate telecommunication service inequities both within the territory and between the Yukon and other areas of the country as well as examine the issue of access to a choice in telecommunication services within the Yukon.

In addition, well defined communications policy objectives would give the government a measuring stick with which to see if its broadcasting and telecommunication goals were being met through national policies and the federal regulatory regime.

The level of activity under this option, as with Option 3, would require the establishment of a communications program. Many of the costs associated with this program would be borne by the Government of the Yukon and would consist of staff salaries and expenses, specialized consultant fees and the costs associated with government support of local television programming and alternative radio and television distribution outlets.



Summary

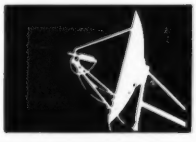


Table I provides a summary of the four options described above. As is set out in this table, Options 3 and 4 are the only two options which would result in programs to significantly increase the level of broadcasting and telecommunications services available to Yukoners. These two options, unlike Options I and 2, would provide an overall policy framework to assist the government in its selection of a VHF replacement, in its role as a full participant in the federal-provincial-territorial consultative process and in its efforts to extend a broader range of educational and informational services to outlying communities.

TABLE I: Policy Options

	Broadcasting	Telecommunications	VHF Mobile Radio System
Option 1 **1**	—existing levels of broadcasting services are acceptable —no significant activity to increase level of service	— existing levels of telecommunications services are acceptable —limited ability for the government to respond to issues facing the Yukon	—a reliable communications system would be maintained —no comprehensive policy basis for decision on replacing or upgrading the system
Option 2 **2**	—Community Radio and Television System ($300,000) upgraded to provide better service to Burwash Landing, Destruction Bay, Carcross and Ross River —no significant influence activity to increase level of other services	—existing levels of telecommunication services are acceptable —limited ability for the government to respond to issues facing the Yukon	—a reliable communications system would be maintained —no copmprehensive policy basis for decision on replacement or upgrading of the system
Option 3 **3**	—community access to all three Yukon radio services and to at least two TV channels ($300,000 - $1,650,000) —influence activities to increase the level of Yukon TV production service	— ongoing influence activities directed toward CRTC and DOC regarding access to basic telephone service, quality of service and rates for service and the rebalancing of local and long distance telephone rates	—an enhanced communications system would be developed —the upgrading or replacement decision could be made in the context of an integrated and coordinated policy for communications in the Yukon
Option 4 **4**	—community access to all three Yukon radio services and to at least two TV channels —influence activities and funding for increased Yukon TV production and distribution	—ongoing influence activities directed towards CRTC and DOC focusing on basic telephone service, rate rebalancing plus the competitive provision of telecommunications services in the Yukon	—an enhanced communications system would be developed that would actively contribute to the long term communications policy goals

Federal-Provincial - Territorial Consultation	Industry & Community Liaison	Distance Education	Culture	Technological Development
—limited participation by the Yukon government	—limited activity in this area	—no integrated policy framework to govern activity in this area	—no involvement	limited activity in this area
—limited participation by the Yukon government	—limited activity in this area	—no integrated policy framework to govern activity in this area	—no involvement	—limited activity in this area
—a comprehensive policy framework would permit effective Yukon government participation to achieve specific policy objectives	—effective consultation would be an ongoing activity	—potential to establish programs and increase access	—not a part of policy at this time but cultural goals that are related to communications could be incorporated later if this is appropriate	—policy framework to monitor and review developments for use in the Yukon
—a comprehensive policy framework would permit effective Yukon participation to achieve specific policy objectives	—effective consultation would be an ongoing activity	—first steps to implement distance education initiatives could be taken including long term planning for a northern educational television network	—not a part of policy at this time but cultural goals that are related to communications could be incorporated later if this is appropriate	—policy framework to monitor and review developments for use in the Yukon

Given these options, the challenge facing all Yukoners is to select the level of activities and initiatives which will create a Yukon communications environment which best reflects the interests and concerns of Yukoners.

This choice might be guided by the following suggested criteria. An integrated Yukon communications policy could:

1. ***directly respond to the Yukon communications policy objectives set out at the beginning of this paper;***

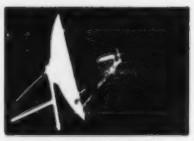
   These objectives have been developed in an effort to relate them to the social, economic and cultural aspirations of all Yukoners and to recognize the desire of Yukoners to shape their own future creatively and independently.

2. ***be based on a realistic and cost-effective expenditure of public and private funds;***

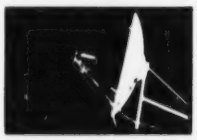
   Public funds are limited and must be spent wisely. Private funds also are limited due to the size of the market in the Yukon and the difficulties of providing service. Policies which result in the expenditure of public funds or which create new obligations for the expenditure of private funds should take these limitations into account and should be designed to result in the most cost-effective provision of services.

3. ***address short-term needs while at the same time providing a flexible longer-term policy framework capable of responding to changing technological, social and economic conditions.***

   As was discussed in the Background Paper, the communications environment is characterized by constant change, particularly in the area of technology. While a Yukon communications policy must address short term needs in the context of current technology, the options presented here are not cast in stone but may be molded and shaped over time to provide Yukoners with the means to respond quickly and effectively to changes in technology and to changes in the Yukon's economic, social and cultural environment. Therefore selection of options that provide a satisfactory level of service in the short or medium term but also provide a base for the longer term should be given serious consideration.



The Challenges for the Future



The preceding options examined the ways by which Yukoners could begin immediately to play a more direct role in shaping their own communications environment. In the longer term, however, as the communications industry in the territory gains greater strength, new opportunities and new challenges will arise.

Yukon Television Network

For example, at some point it may be possible to establish a Yukon television network using satellite technology for the delivery of local news, information, educational and cultural programming.

This network could be used for video/teleconferencing whereby a live video and audio signal is delivered to outlying communities and residents in these communities use telephone lines to talk to the originators of the program. Such video/teleconferencing could be a particularly powerful instrument for delivering interactive distance education services, for conducting public meetings, seminars or for medical personnel in outlying communities to consult with specialists in Whitehorse.

Facilities for this network could be established in conjunction with Yukon College and could be coordinated with the work of Arts Canada North in developing a Yukon Cultural Centre. The demand of this network for programming and for skilled technicians would create significant employment opportunities in the territory, supporting the existing Yukon communications industry and creating further incentives for its expansion.

Although it is very difficult to estimate the costs for this type of television service, capital and other operating estimates for order of magnitude costs have been developed. These are based on the costs involved in developing the B.C. government's Knowledge Network. The capital cost of establishing this satellite-based network is estimated to be $3.5 million in current dollars. Programming and other operating costs are estimated to be in the $10 - $13 million range each year. This range represents 6% to 8% of the Government of the Yukon's $171 million annual operations and maintenance budget for the 1986/87 fiscal year. While the magnitude of these costs suggest that interim approaches such as those set out in the preceding options may be required in the near term, the economic, social and cultural benefits of a Yukon network suggest that it should be seen as an important challenge for the future.

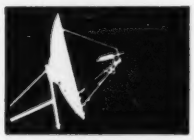
Regulation of Telecommunications in the Yukon

While there are no current plans for the Government of the Yukon to regulate telecommunications in the territory, it may be desirable at some future point for the government to assume a more direct role in the regulation of telecommunications. The mechanisms for achieving a more direct role could include:

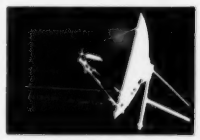
1. having a Yukon representative on the CRTC Board of Commissioners;

2. working within the consultative process to influence policy direction exercised by the federal Department of Communications to make sure it is the result of consultation with the provincial and territorial governments which may be affected; once such a directive influence is established, the government could work closely with the federal Department of Communications to develop a new policy framework for the regulation of telecommunications in the Yukon that explicitly takes into account the special and unique needs of the territory; and

3. working within the consultative process to establish an agreement on the future sharing of roles and responsibilities in telecommunications.



The Consultation Process



The Department of Community and Transportation Services intends to undertake a full, pro-active consultation process on the development of an integrated Yukon communications policy. This consultation process will consist of three phases.

First, the Background Paper entitled Broadcasting and Telecommunications (Part I: Facts, Figures and Definitions) and this Discussion Paper on Policy Options will be made available throughout the territory. The public may obtain copies of these papers in Whitehorse from the Department of Community and Transportation Services or from the Yukon government information desk. In the communities, the papers may be obtained through territorial agents, public libraries, local government offices, community organizations and band councils. The papers also will be sent to all members of the Yukon broadcasting and telecommunications industry, related local businesses, all users of the VHF Mobile Radio System and all groups, individuals and organizations with a direct interest in communications.

Secondly, in early 1987 the Department of Community and Transportation Services will participate in a series of public meetings throughout the territory to allow interested individuals and groups to comment on the policy options. The department also will arrange meetings with members of the Yukon broadcasting and telecommunications industry and with other organizations which have a direct and ongoing interest in communications policy. In order to ensure that individual points of view are given full consideration, all interested persons are invited to submit written comments directly to the department.

Thirdly, the Department of Community and Transportation Services will hold a communications policy symposium in late winter, 1987. Individuals, groups and organizations who have expressed an interest in communications policy will be invited to attend this symposium to discuss the policy options and to assist the department in establishing a course of action for the future.

The views and comments received through this process will be given full consideration and assessed prior to making recommendations to Cabinet on the finalization of a Yukon communications policy. Once Cabinet approves a policy direction, the Department of Community and Transportation Services will develop an action plan for the next 3 to 5 years, to properly schedule and integrate the programs and initiatives required to implement the policy and achieve the stated objectives.

After this, consultation with the public and with the Yukon communications industry will continue on an ongoing basis as a regular part of the communications program functions undertaken by the Department of Community and Transportation Services.

Glossary of Terms

analog: a transmission technology capable of carrying voice and low-speed data applications; the standard technology used for telephone systems

Anik B/Anik C/Anik D: Canadian satellites are called Anik; the letter following indicates the generation of the satellite and the frequencies employed; a satellite's coverage area, or footprint, can be one third of the earth's surface, or a smaller area by means of spot beams

Aurora 400 UHF: is a radio-telephone communications system connecting radio-telephone subscribers to land based telecommunications systems and to each other. NorthwesTel's Aurora system will be operating in the 400 MHz frequency band and will accommodate both fixed station and mobile customers

CNCP (Canadian National-Canadian Pacific): a national telecommunications carrier offering data and private voice services

cable distribution system: a system which uses co-axial cable to distribute television and radio services in the local community; only those homes which are connected may receive the programming

Canadian Radio-Television and Telecommunications Commission (CRTC): an independent federal regulatory agency that licences broadcasting and federally regulated telecommunications companies

CANCOM (Canadian Satellite Communications Inc.): a company licensed by the CRTC to deliver television and radio channels via satellite to remote and underserved communities throughout Canada; CANCOM is licensed to distribute four Canadian television services (two independent television stations, a CTV affiliate and a French language television package), four U.S. television services (CBS, NBC, ABC & PBS) as well as eight Canadian radio signals

Cantel: a major cellular mobile telephone company operating in many large cities in Canada

Caplan/Sauvageau Report: the Report of the Task Force on Broadcasting Policy, 1986; a Task Force appointed by the federal Minister of Communications in May 1985 to examine and make recommendations to the Minister on an industrial and cultural strategy to govern the future evolution of the Canadian broadcasting system through the remainder of the century

cellular mobile telephone: a specialized form of mobile telephone service which uses modern computer controlled radio technology which was developed to reduce problems associated with the congestion of radio frequencies in urban areas; use of this technology has permitted many of the features available with normal telephone service to be available with cellular mobile telephone service as well

common carrier: a company such as NorthwesTel which is responsible for the provision of telephone and data telecommunication services to all users without discrimination

Community Radio and Television System: a series of mountaintop repeaters operated by the Department of Community and Transportation Services providing CBC radio in three locations and CBC television in thirteen locations

digital: an advanced computerized transmission technology which allows for high speed data, video and voice applications

discretionary service: a specialized broadcasting service which is available only with the payment of a fee, in addition to regular cable fees — e.g. pay television

distance education: the use of television, radio, telephone and satellite-linked computers to teach and train students who live in remote communities

earth station: the receiving equipment located on the ground to receive signals from satellites

enhanced telecommunications services: a service which adds value to a basic telecommunications transmission services — e.g. a telephone answering service

microwave: a transmission technology which uses radio frequencies to transmit voice, data or video from one place to another; operates only on a line of sight basis

Nielsen Task Force: a federal government Task Force on Program Review established in September 1984 under the direction of the Honourable Erik Nielsen, M.P. to examine all federal government programs with the objective of better service to the public and improved management of government programs

Northern Native Broadcast Access Program: under the authority of the federal Department of the Secretary of State and the federal Broadcasting Act, federal financial assistance is provided to northern native communications societies for establishing production facilities in the north which will ensure that a significant amount of broadcast programming relevant to the needs of native people is available on radio and television

over-the-air: television or radio channels received using an antenna are said to be received over-the-air; as opposed to off-air, that is by satellite or cable

PABX: a central switchboard for telephone traffic operated by the customer

private long distance telephone systems: a telephone network used to transmit the telephone traffic generated solely by one user; this network does not allow the customer to both originate traffic from and terminate traffic in the regular telephone network

public long distance network: the long distance network provided by telephone companies which allows any telephone customer to call any other telephone customer

rate rebalancing: the idea that local telephone rates should increase and long distance telephone rates should decrease

rebroadcast repeaters: television or radio transmitters that are fed by microwave, satellite or by the reception of signals off-air; used to expand the availability of a channel beyond the area where it would normally be received — i.e. to repeat the service outside its originating area

satellite: powerful receiving and transmitting technology located in orbit around the earth

scrambled: television signals which have been distorted so as to discourage viewing by all but those customers who have a decoding device; this can be done locally to protect the signal from being received by non-subscribers and it can be done on the satellite to restrict reception of the satellite signal

sharing and resale: occurs when a single telecommunications service is acquired and used by more than one customer; sharing or resale arrangements are negotiated between the customers themselves

system interconnection: occurs when one telecommunications system interconnects its lines to another for the purpose of accessing customers served by that system

tariffs: the terms and conditions (including rates) under which telecommunications services are sold

teleconference: a conference among people remote from one another who are linked by telephone or television; it can extend from audio linkage only, to one way video and two way voice, to two way audio and video

telecommunications: the transmission of voice, data and video by electronic means; broadcasting is a specialized form of telecommunications whereby the transmission is intended for reception by the general public

telecommunications carriers: the companies who provide telecommunications services and who, by law, may carry but not alter or originate traffic

terminal attachment: the attachment of terminals — i.e. telephone sets — to the telephone system

terrestrial transmission facilities: transmission systems using wires or microwave as opposed to space facilities such as satellite

transponder: receive and transmit equipment located in a satellite for the transmission of one satellite channel; each satellite contains many transponders/channels

trunking: the carriage of telecommunications traffic between local systems

TVRO antenna: a dish shaped antenna designed to receive television and radio signals from a satellite

underserved community: an area where two or fewer English-language television channels are available to the viewer

unscrambled: television signals which are not coded, and can therefore be viewed by customers without the use of specialized decoding hardware

uplink: the electronic facility and antenna needed to transmit a signal to a satellite

VHF mobile radio system: a radio system providing voice links between mobiles, work camps and headquarters using Very High Radio Frequencies (VHF)

videotex: a generic name used to describe an interactive visual information system in which data is transmitted from a computer network over telephone or cable-television lines and is displayed on a subscriber's television or computer terminal screen